

APPENDIX "A"

To Broad Creek Public Service District
Regulations for Water and Sewer Service
Dated December 2, 2005

CROSS CONNECTION CONTROL
PROGRAM

December 2, 2005

Approved: _____

Date: _____

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SUPPLEMENTS

- Supplement A State Primary Drinking Water Regulations as amended April 29, 2005 R.61-58.7(F)
- Supplement B SCDHEC List of approved Backflow Prevention Devices
Double Check Valve Assemblies
Reduced Pressure Principle Assemblies
Pressure Vacuum Breakers
- Supplement C SCHDEC List of Backflow Equipment Representatives and Backflow Prevention Re-Certification Stations
- Supplement D Definitions
- Supplement E Typical Facilities, Cross Connection or Water Use Which May Endanger the Public Water Supply
- Supplement F Emergency Response Plan
- Supplement G Steps for Gaining Approval of a New or Existing Service Backflow Prevention Assembly
- Supplement H 2005 Cross Connection Program Overview

INTRODUCTION

Cross-Connection is defined as any physical arrangement whereby a potable water system is or may be connected directly or indirectly with a non-potable water system or non-permitted water system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, liquid, gasses, sewage or other waste of unknown or unsafe quality, which may be capable of importing contamination to the public water system as the result of backflow, bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other temporary, permanent or potential connections through which or because of which back-flow or back-siphonage could or would occur.

The Federal Government has established through the Environmental Protection Agency (EPA), national standards for safe drinking water promulgated as "The Safe Drinking Water Act of 1974", which makes the states responsible for the enforcement of these standards as well as the supervision of public water supply systems and the source of drinking water.

The South Carolina Department of Health and Environmental Control (SCDHEC) promulgated the "State Primary Drinking Water Regulations, as amended April 29, 2005", wherein Cross Connection Control is addressed in R61-58.7(F). A copy is included as Supplement "A".

These regulations are to be reasonably interpreted. It is the intent of these regulations to recognize that there are varying degrees of hazard and to apply the principle that the degree of protection should be commensurate with the degree of hazard.

These regulations are not to be construed as prohibiting other governmental authorities from establishing requirements regarding protection for water supply more rigid than herein indicated, where circumstances warrant.

It is recognized that the control of cross connection requires cooperation between the District and SCDHEC. The water purveyor has primary responsibility to prevent water from unapproved sources, or other substances, from entering the public water supply system. The SCDHEC has the overall responsibility for preventing water from

unapproved sources from entering either the potable water systems within the water consumers' premise or the public water supply directly.

I. Purpose

- A. The purpose of the Cross-Connection Control Program is to protect the public potable water supply served by the Broad Creek PSD from the possibility of contamination or pollution.
- B. To promote the elimination or control of existing cross connections, actual or potential, between its customers potable water system, and non-potable systems.
- C. To provide for the maintenance of a continuing program of cross connection control which will effectively prevent the contamination or pollution of all potable water systems by cross connection.
- D. To prevent making of cross connections in the future.
- E. To encourage the exclusive use of public sources of water supply.
- F. To protect the potable water supply within the premise where plumbing defects or cross connections may endanger the drinking water supply available on the premise.

II. Authority

- A. The Federal Safe Drinking Water Act of 1974.
- B. The statutes of the State of South Carolina "State Primary Drinking Water Regulations, as amended April 29, 2005."
- B. Broad Creek Public Service District, Regulations for Water and Sewer Service, adopted December 2, 2005.

III. Responsibility

The Broad Creek PSD shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow or back-siphonage of contaminants or pollutants through the water service entrance connection. This policy of containment is necessary due to changes in models or components of equipment, methods of manufacturing and additions to plants, buildings, etc., which require changes in water requirements. As a result, new cross-connections may be installed and existing internal protection may be by-passed, removed, or become inefficient. Therefore, containment of the system at the water service entrance connection provides continual protection regardless of any water line modification within the establishment.

The customer's responsibility will start at the point of delivery from the public potable water system and includes all of his water systems. The customer, at his own expense, shall install, operate, test and maintain approved backflow prevention devices, as directed by the Broad Creek PSD. The customer shall maintain accurate records of tests and repairs made to backflow prevention devices and provide the Broad Creek PSD with copies of such records. The records shall be on forms approved or provided by the Broad Creek PSD. In the event of accidental pollution or contamination of the public or consumer's potable water system due to backflow on or from customer's premises, the owner shall promptly take steps to confine further spread of pollution or contamination within the customer's premises, and shall immediately notify the Broad Creek PSD of the hazardous condition.

The installer's responsibility is to make proper installation of backflow prevention devices in accordance with the manufacturer's installation instructions and any additional instructions approved by the Broad Creek PSD. The installer will also be responsible to ensure that the device is working properly when it is installed and will be required to furnish to the Broad Creek PSD the following information:

1. Service address
- b. Owners name
- c. Type of device and size
- d. Description of location
- e. Date of installation
- f. Manufacturer
- g. Model number

- h. Serial number
- i. Generic names of contaminant or pollutant used on premises
- j. Completed copy of test report (page G8) by a certified tester.

All Reduced Pressure (RP), Double-Check Valve Assembly (DCVA), and Pressure Vacuum Breaker (PVB) will be required to be tested following installation by a certified Backflow Prevention Device Technician.

IV. Plan Review

All new construction plans and specifications for industrial and commercial facilities shall be reviewed by the Broad Creek PSD to determine the degree of possible cross-connection hazard. All one story or greater, commercial and industrial establishments will require backflow preventers. Other requirements will be made during the initial plan review.

In order to determine the degree of hazard to the public potable water system, the questionnaire in Supplement G may be required to be completed by the owner or owner's representative. This questionnaire does not include a detailed inspection of the location or disposition of the water lines, but will provide information about the water uses on the premises, the existence of cross connection, the availability of auxiliary or used water supplies and the degree of hazard that the customer's system presents. If additional information is needed, it shall be supplied to the Broad Creek PSD upon request. On-site inspections are made of new and existing facilities and should any devices or plumbing changes be required, a follow-up inspection will be made of the same facilities at a later date.

V. Right of Entry

Whenever it shall be necessary for the purposes of compliance or enforcement of this Policy, the Broad Creek PSD through its authorized representative, may enter upon any property or premises at reasonable times for the purpose of:

- 1. Copying any records required to be kept under the provisions of this Policy,

2. Inspecting any equipment or water lines or
3. Sampling of any water suspected of any cross-connection. The Broad Creek PSD may enter upon the property at any hour under emergency circumstances to perform any inspection or investigation required to enforce this Policy.

VI. Inspection and Testing

Annually the Broad Creek PSD will inspect the water customer's backflow prevention records for compliance and local ordinances. The customer shall maintain accurate records of tests and repairs made to backflow prevention devices and copies must be made available to the Broad Creek PSD within 12-months from date of installation. All records shall be on forms approved by the Broad Creek PSD. Following any repair, overhaul, re-piping, or relocation of the device, the customer shall have the device tested to insure that it is in good working condition and will prevent backflow. However, this testing may be more often in those instances where successive inspections indicate repeated failure to properly repair and maintain such device or devices, and to keep adequate records of each test and subsequent maintenance and repair, including materials or replacement parts.

VII. Emergency Response Plan and Public Notification

When water quality emergencies are identified The Broad Creek PSD will implement the Emergency Response Plan and Public Notification procedure outlined in Supplement F.

VIII. Requirements

A. Broad Creek PSD

1. On new installations, the Broad Creek PSD will provide on-site evaluation and/or inspection of the plans in order to determine the type of backflow preventer, if any, that will be required, will permit, and perform inspection and testing. In any case, a minimum of a dual check valve will be required in any new construction.

2. For premises existing prior to the start of this program, the Broad Creek PSD will preform evaluations and inspections of plans and /or premises and inform the owner by letter of any corrective action deemed necessary, the method of achieving the correction, and the time allowed for the correction to be made. Ordinarily, ninety (90) days will be allowed, however, this time period may be shortened depending upon the degree of hazard involved and the history of the device(s) in question.

3. The Broad Creek PSD will not allow any cross connection to remain unless it is protected by an approved backflow preventer for which a permit has been issued and which will be regularly tested to insure satisfactory operation.

4. The Broad Creek PSD shall inform the Owner by letter, of any failure to comply, by the time of the first re-inspection. The Broad Creek PSD will allow an additional fifteen (15) days for the correction. In the event the Owner fails to comply with the necessary corrections by the time of the second re-inspection, the Broad Creek PSD will inform the owner by letter, that the water service to the Owner's permises will be terminated within a period not to exceed ten (10) days. In the event that the Owner informs the Broad Creek PSD of extenuating circumstances as to why the correction has not been made, a time extension may be granted by the Broad Creek PSD but in no case will exceed an additional thirty (30) days.

5. If the Broad Creek PSD determines at *any time* that a serious threat to the public health exists, the water service will be terminated immediately.

6. The Broad Creek PSD shall have on file, a list of Private Contractors who are certified backflow device testers. All charges for these tests will be paid for by the Owner of the building or property.

B. Owner

1. The Owner shall be responsible for the elimination or protection of all cross connections on his premises.

2. The Owner, after having been informed by a letter from the Broad Creek PSD, shall at his expense, install, maintain, and test, or have tested, any and all backflow preventers on his premises.
3. The Owner shall correct any malfunction of the backflow preventer which is revealed by periodic testing.
4. The Owner shall inform the Broad Creek PSD of any proposed or modified cross connections and also any existing cross connections of which the Owner is aware but has not been found by the Broad Creek PSD.
5. The Owner shall not install a by-pass around any backflow preventer unless there is a backflow preventer of the same type on the by-pass. Owners who cannot shut down operation for testing of the device(s) must supply additional devices necessary to allow testing to take place.
6. The owner shall install backflow preventers in a manner approved by the Broad Creek PSD or the SCDHEC.
7. The Owner shall install only backflow preventers approved by the Broad Creek PSD.
8. Any Owner having a private well or other private water source, must have a permit if the well or source is cross connected to the Broad Creek PSD system. Permission to cross connect may be denied by the Broad Creek PSD. The owner may be required to install a backflow preventer at the service entrance if a private water source is maintained, even it is not cross connected to the Broad Creek PSD's system.
9. In the event the owner installs plumbing to provide potable water for domestic purposes which is on the Broad Creek PSD side of the backflow preventer, such plumbing must have its own backflow preventer installed.
10. The Owner shall be responsible for the payment of all fees for permits, annual or semi-annual device testing, re-testing in the case that

the device fails to operate correctly, and second re-inspections for non-compliance with Broad Creek PSD or SCDHEC requirements.

IX. Degree of Hazard

The Broad Creek PSD recognizes the threat to the public water systems arising from cross connection. All threats will be classified by degree of hazard and will require the installation of approved reduced pressure principle backflow prevention devices, double check valves, pressure vacuum breaker, or air-gap separator.

The protective device required shall depend on the degree of hazard as tabulated below:

1. Low Degree of Hazard

A low degree of hazard is one which may cause an actual or potential threat to the physical properties of the water system or the potability of the public or consumer's potable system. However, a low degree of hazard would not constitute a health or system hazard. Double Check Valve Assemblies (DCVA) are approved for use when protecting the potable water system from backflow when a low degree of hazard is involved. Residential Dual check valves shall be permissible only in low risk residential service connections.

2. Health Hazard

"Health Hazard" shall mean an actual or potential threat of contamination or pollution of a physical or toxic nature to the public potable water system or the consumer's potable water system to such a degree of intensity that would be a danger to health. Reduced Pressure Principle Assemblies (RPPA) are approved for use to protect the potable water system from back flows when there is an actual or potential health hazard.

3. Backsiphonage

Pressure Vacuum Breakers (PVB) are approved for use when protecting

the potable water system from backsiphonage only when a health hazard or non-health hazard is involved. It is very important to understand that the PVB is not designed for back pressure. Also, the PVB must be installed 12-inches above any downstream plumbing.

4. Detector Check Valves

Double Detector check Valves Assemblies and Reduced Pressure Principle Detector Check Valve Assemblies are made up from approved DCVA's and RPPA's. These devices are mainly designed for Fire Line Use.

X. Type of Backflow Protection Required

An approved backflow prevention device of the type designated shall be installed on each water service connection to the following types of facilities. This list is presented as a guideline and should not be construed as being complete.

Abbreviations used are as follows:

- A.G. - Air Gap Separation
- R.P. - Reduced Pressure Principle Backflow Preventer
- D.C.V.A.- Double Check Valve Assembly
- P.V.B.- Pressure Vacuum Breaker
- A.V.B. - Atmospheric Vacuum Breaker

<u>Type of Facility</u>	<u>Minimum Type of Protection</u>
Breweries, Distillers, Bottling Plants	D.C.V.A.
Car wash with recycling system and/ or wax educator	R.P.
Chemical Plants	R.P.
Dairies	D.C.V.A.
Dentist Office	R.P.
Fertilizer Plants	R.P.
Film Laboratory or Processing Plant	R.P.
Food or Beverage Plant	D.C.V.A.
Hospitals, Clinics, Medical Buildings	R.P. parallel

Irrigation Systems	D.C.V.A. or P.V. B.
Laboratories	R.P.
Laundries & Dry Cleaning Plants	D.C.V.A. or R.P.
Machine Tool Plants (health or system hazard)	R.P.
Machine Tool Plants (Pollution Hazard)	D.C.V.A. or R.P.
Metal Processing Plant (Health or system hazard)	R.P.
Metal Processing Plant (Pollution Hazard)	D.C.V.A.
Metal Plating Plant	R.P.
Morgues or Mortuaries	R.P.
Nursing Homes	R.P.
Packing Houses or Rendering plants	R.P.
Paper Products Plants	R.P.
Pesticides (Exterminating companies overhead fill Petroleum Processing Plant)	P.V.B. R.P.
Petroleum Storage Yard (Health or system hazard)	R.P.
Petroleum Storage Yard (Pollution hazard)	D.C.V.A.
Pharmaceutical or Cosmetic Plant	R.P.
Piers, Docks, or waterfront facilities	R.P.
Power Plants	R.P.
Radioactive Material Plants	R.P.
Restaurants, with soap eductors and/or industrial type disposal	R.P..
Sand and gravel plants	D.C.V.A.
Schools with laboratories	A.V.B. or D.C.V.A.
Swimming Pools with piped fill line at pool	A.G. or R.P.
Sewage Treatment Plant	R.P.
Sewage Pumping Stations	P.V.B. or R.P.
Tall Buildings over two stories	R.P.
Veterinary Establishments	R.P.

In addition to and including those types of facilities previously listed, an approved backflow prevention device of the type designated shall be installed on each potable water service connection to any premises containing the following real or potential hazards. (Note: Any Commercial establishment not delineated above will be required to install a double check valve assembly.)

Premises having an auxiliary water system not connected to public water system	R.P.
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Premises having a water storage tank, reservoir, pond, or similar appurtenance	R.P.
Premises having a steam boiler, cooling system or hot water heating system where chemical water conditioners are used	R.P.
Premises having submerged inlets to equipment	R.P.
Premises having self-draining yard hydrants, fountains, hose boxes or similar devices presenting a health or system hazard (i.e., chemical storage plants, tank farms, bulk storage yards)	R.P.
Premises having self-draining yard hydrants, fountains, hose boxes, or similar devices presenting a pollution hazard (i.e., parks, play fields, cemeteries)	D.C.V.A.
Other specified by the District	

XI. Installations Requiring Continuous Service: Parallel Installation

All backflow prevention devices with test cocks are required to be tested with a minimum frequency of once per year. Testing requires a water shutdown usually lasting five (5) to twenty (20) minutes. For facilities that require an uninterrupted supply of water, and when it is not possible to provide water service from two separate meters, provisions shall be made for a "parallel installation" of backflow prevention devices.

Multi-story buildings which have a number of flushometer toilets should be equipped with parallel devices. Experience has shown if the water supply is shut off to this type of building, flushometers may have to be manually reset.

During testing one device is left on while the other is being tested. Usually the two devices are sized one device size smaller than the service line, e.g. one 2 inch device or two 1 ½ inch devices, one 8 inch device or two 6 inch devices.

The Broad Creek PSD will not accept an unprotected bypass around a backflow

preventer when the device is in need of testing, repair or replacement.

XII. Health Hazard; System Hazard; Pollution Hazard

“Health Hazard” means any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health and well being of users. The word “severe” as used to qualify “health hazard” means a hazard to the health of the user that could reasonably be expected to result in significant morbidity or death. “System Hazard” means a condition posing an actual or potential threat of damage to the physical properties of the public water system or a potable consumer’s water system. “Pollution Hazard” means a condition through which an aesthetically objectionable or degrading material not dangerous to health may enter the public water system or a potable consumer’s water system.

XIII. Exterminating Companies

All tanks, tank trucks, and spraying apparatus used to convey pesticides or herbicides in an exterminating process are required to use only overhead (air gap) piping arrangements. All filling locations will consist of over-head piping arrangements with correctly installed pressure vacuum breakers. If for any reason an overhead piping arrangement cannot be used, a reduced pressure zone backflow preventer must be installed on the fill line.

XIV. Cross Connection Control Requirements for Fire Protection Systems

For purposes of cross-connection control, fire protection systems shall be classified as Sprinkler, Standpipe, or Combined. Sprinkler systems shall be further classified as follows:

Class 1- directly supplied from public water mains only; no pumps, tanks or reservoirs; no physical connection from other water supplies; no antifreeze or additives of any kind;

Class 2 - directly supplied from public mains, such as Class 1, except that booster pumps may be installed in supply lines.

Class 3 - directly supplied from public mains, same as Class 1, plus one or more of the following: Elevated storage tanks or pressure tanks; fire pumps taking

suction from above-ground covered reservoirs or tanks. All storage facilities shall be filled from the potable water supply and maintained in a potable condition.

Class 4 - directly supplied from public mains similar to Classes 1 and 2 , and with an auxiliary water supply on or available to the premises; or an auxiliary water supply located within approximately 1700 ft of the pumper connection.

Class 5 - directly supplied from public mains, and interconnected with auxiliary supplies, such as: pumps taking suction from reservoirs exposed to contamination, or rivers and ponds; driven wells; mills or other industrial water systems; or where antifreeze or other additives are used.

Class 6 - directly supplied from public water mains only, with or without gravity storage or pump suction tanks, and interconnected with industrial systems.

Standpipe systems shall be further classified as non hazardous (impurities equal to Class 3 or lower sprinklers).

Fire Protection Systems shall be contained from the public water mains as follows:

Class 1 and Class 2 sprinkler systems shall include the following checking device in the water supply lines from the public mains: an approved double detector check backflow preventer with by-pass.

By-pass shall be equipped with appropriate checking device. Provision shall be made to test all devices, including shut-off valves, as required. All devices shall be listed or classified for fire protection service by Underwriters Laboratories in accordance with UL Standard 312.

Class 3 sprinkler systems, and non hazardous standpipe systems, shall be contained by the installation of double check or double detector check backflow preventers. In addition, all backflow preventers used on fire protection systems shall be classified by Underwriters Laboratories in accordance with UL Standard 312.

Class 4 and Class 5 sprinkler systems, and Hazardous standpipe systems, shall be contained by reduced pressure zone backflow preventers that are classified in accordance with UL 312.

Class 6 sprinkler systems, and standpipe systems of similar degree of hazard, shall be contained by procedures determined after a survey of the premises.

Combined sprinkler and standpipe systems shall be contained from the public mains by procedures applicable to the component that represents the higher degree of impurity.

The purpose of certain checking devices used, or likely to be used, with fire protection systems is outlined below to call attention to those approved for cross-connection control and those that are not:

1. Double check - To prevent backflow of polluted water from fire protection systems into the potable water system; and to provide directional flow.
2. Double detector check - To prevent backflow of polluted water from fire protection systems into the potable water system; to detect leaks in fire protection systems; and to provide directional flow.
3. Reduced pressure zone check - To prevent backflow of contaminated water from fire protection systems into the potable water system; and to provide directional flow.
4. Reduced pressure detector check - To prevent backflow of contaminated water from fire protection systems into the potable water system; to detect unauthorized use of water; to detect leaks in the fire protection system; and to provide directional flow.

The two OS&Y Resilient Seat shut-off valves that are necessary for periodic testing of a backflow preventer must be attached directly to the inlet and outlet flanges of the device and need to be in addition to any valve(s) already required in the water supply piping.

The shut-off valves required for periodic testing of a backflow preventer, shall

be supplied by the backflow preventer manufacturer and shall be listed for fire protection service by a nationally recognized testing laboratory, such as FM or UL, and the inlet valve shall include an approved test cock on the upstream side.

The Broad Creek PSD requirements for Cross-Connection Control for fire systems does not preclude any requirements that may be the responsibility of the Fire Marshall of the Town of Hilton Head.

Private Fire Hydrants

On private property where there are private fire hydrants, the following requirements are necessary:

- 1) UL, FM Approved fire line meter and strainer to be installed and sized for designed fire flow.
- 2) UL, FM Approved double check valve to be installed downstream of the fire line meter.

City Fire Hydrant Use

Contractors or any person using a Broad Creek PSD Fire Hydrant for any purpose must post a bond with the Broad Creek PSD and install a fire hydrant meter and backflow preventer supplied by the Broad Creek PSD. Upon return to the Broad Creek PSD in good condition, the bond will be returned, once all payments for water use have been completed.

XV. Fire Protection Guidelines

Prior to any connection of new or renovated fire sprinkler systems to the Broad Creek PSD, the following procedures are required:

1. Three sets of plans and hydraulic design data must be submitted for review to the Broad Creek PSD office. All plans must be prepared or reviewed by a professional engineer and plans must be stamped with the engineers seal.
2. The plans will be reviewed and one set returned with any required changes. Changes will be noted on the plans. The plans will also be accompanied by a

review letter. One set of plans will be retained for our files and one provided to the City for inspection purposes.

3. Any Booster pump installations will be designed to insure that pressure in the distribution system does not fall below 20 psi residual. A minimum of 20 psi residual must be maintained in the distribution system at all times. Detailed specifications on any fire pump are required for review for installation. No antifreeze or similar chemical will be allowed in Fire Sprinkler Systems unless approved by the Broad Creek PSD.

Backflow Prevention Requirements

All new, renovated or existing Fire Sprinkler System will be required to have an approved double detector check valve with an approved by-pass line is also required to have a line size double check valve. The meter must register in gallons. The double detector check valve must meet all requirements of Broad Creek PSD Standard Specifications.

Installation of Devices

Installation of the double detector check valve and by-pass meter are the owner's responsibility. The double detector check valve and by-pass meter will in all cases be installed so that they are readily accessible for maintenance and inspections. Wet taps to the Broad Creek PSD water main will be scheduled accordingly with the District after all plans and hydraulic data have been reviewed and approved by the Broad Creek PSD and the Senior Fire Inspector of the Town of Hilton Head's Inspections Department and the inspection of the installed underground system has been approved by the Broad Creek PSD. At least one week's advance notice will be given to the Broad Creek PSD prior to any wet tap of the Broad Creek PSD main. The owner will be responsible to provide all hardware, men and equipment required to make the wet tap and to provide adequate safety measures to protect the workmen and the public.

All tapping sleeves will be ductile or cast iron mechanical joint fittings in accordance with Broad Creek PSD Standard Specifications. All installations requiring thrust blocking, tie-rods, or retaining glands will be the responsibility of the owner. Adequate design and installation procedures must be taken to prevent leakage of the system. The developer or owner shall provide to the Broad Creek PSD a statement

from their engineer certifying that the materials and workmanship including pipe, bedding, thrust block, valves, manholes, and other related materials meet the Broad Creek PSD specifications and standards. Upon request by the Broad Creek PSD, the certification shall be substantiated by material affidavits from the supplier. All underground fire systems will be pressure tested from the Broad Creek PSD main to the double detector check and appurtenances. Any fire line less than 50 feet from the main to the detector check will not be required to be disinfected, provided that the underground system was thoroughly flushed and protected from foreign materials during installation. Any fire line in excess of 50 feet will be required to be disinfected and sampled for bacteriological analysis.

It will be the responsibility of the owner to adequately pressure test the underground system from the detector check to the building. No connection will be made to the Broad Creek PSD system until the testing requirements have been met and observed by the Broad Creek PSD Inspector.

Maintenance Requirements

It will be the responsibility of the owner to maintain the Fire Sprinkler System from the valve at the Broad Creek PSD water main to the inside of the building including the double detector check valve. The Broad Creek PSD will maintain the meter and meter couplings. A letter from the Owner is required delineating maintenance responsibilities of the fire system. This owner/client declaration must be on file in the Broad Creek PSD Office.

Restrictions

The domestic water line and the fire line in all cases will be separated unless the main line is oversized to meet both the total domestic and fire demand requirements of the system. It will be the responsibility of the consultant and/or owner to provide total water demand requirements of the system with the plans and hydraulic data. Both lines will be tapped individually at the Broad Creek PSD Water Main. Any unauthorized use of water except for fire protection is prohibited.

Inspections

When installation of the fire sprinkler system is completed, notification will be given to the Broad Creek PSD. An inspection of the system from the Broad Creek

PSD water main to the double detector check valve will be scheduled after notification. Appropriate follow-up inspections will be scheduled accordingly.

Fire Sprinkler System on Common Domestic Lines

Guidelines for minor fire sprinkler system utilizing a common water line for both domestic service and fire protection are summarized below. The Guidelines will still require several calculations in order to determine total system demand (TSD). Once TSD has been determined, meter sizing can be made in order to prevent damage to the meter and/or over/under registration of the meter. The consultant and/or architect will be responsible to determine both TSD and meter sizing.

Guidelines for Fire Sprinkler System less than 6 Heads

Purpose: To outline basic minimum requirements for the installation of fire sprinkler systems for minor system. Minor systems are defined as those system with a maximum of 6 sprinkler heads (160 gpm total system demand, TSD) utilizing a common line for the purpose of fire protection and domestic service.

Procedure:

A. Determine Customer Peak Demand to Include:

- 1) Domestic demand (determination of each plumbing fixture value)
- 2) Irrigation demand
- 3) Continuous load total demand (any equipment requiring continuous flow)

B. Determine Total Fire Sprinkler Head Demand in Building

C. Determine Adequacy of Source Supply to Include Recent Fire Flow Test

D. Total System Demand in Gallons Per Minute (gpm)

Customer Peak Demand ----- gpm
Fire Sprinkler Demand ----- gpm
Total System Demand ----- gpm

Requirements and Limitations

1. Common Fire/Domestic lines are limited to a maximum of six sprinklers heads or a total of 160 gpm total demand for both fire and domestic flow.
2. All double check valves must meet the Broad Creek PSD Standard Specifications.
3. Any unauthorized use of water designated for fire protection is prohibited.
4. When installation of the fire sprinkler system is completed, notification will be given to the Broad Creek PSD. An inspection of the system from the Broad Creek PSD water main to the double check valve will be scheduled after notification.
5. Any fire system in excess of six heads or exceeding 160 gpm total system demand will require installation of a separate fire line. The Town of Hilton Head Fire Protection Guidelines will apply to any system requiring a separate main and/or tap.
6. All fire lines will be the responsibility of the owner for both operation and maintenance to include the double check valve. The double check valve must be tested annually and upon request by the Broad Creek PSD, documentation that the tests have been performed must be presented to the Broad Creek PSD office.

Violations: New Systems

No water will be made available to the building until the system is in compliance. The owner will be notified in writing of any violations found during the initial inspection. A follow up inspection will be scheduled giving adequate time for the proper connections to be made. If no corrective action is taken to correct the deficiencies, notification in writing will be given to the owner that water service will not be made available to the building.

Violations: Existing Systems

Existing systems, not in compliance, will have one year from notification by the Broad Creek PSD to make necessary correction to the fire sprinkler system.

Other Cross-connection Hazards

Fixture Inlets or Valved Outlets with hose attachments, which constitute a cross-connection, shall be protected by the proper approved vacuum breaker (AVB, HBVB, etc.) installed at least six inches above the highest point of usage and located on the discharge side of the last valve. Fixtures with integral vacuum breaker manufactured as a unit may be installed in accordance with their approved requirements.

Air Condition Cooling Tower - Potable water inlet shall have an AG separation of twice the inside diameter of the inlet line or a minimum of six inches above the flood level rim.

Aspirators and Ejectors - Shall have an AVB or PVB, depending upon the degree of hazard, on the faucet from which these devices are attached or operated.

Booster Pumps - All booster pumps shall be provided with a low pressure cut off or approved throttling valve unless other acceptable provisions are made to prevent the creation of low or negative pressures in the piping system.

Private Wells - Shall not be interconnected unless the public supply is protected by an RP at the service connection, and approval is given by the Broad Creek PSD.

Portable Spray and Cleaning Equipment - Any portable pressure spray or cleaning units that have the capability of connecting to any potable water supply and do not contain a built-in approved air gap, should be fitted with a reduced pressure backflow device or double check valve assembly on the degree of hazard.

Miscellaneous Uses of Water from Fire Hydrants - The operation of fire hydrants by other than authorized personnel is prohibited. The Broad Creek PSD may permit the use of water from a fire hydrant for construction or other purposes provided the applicant shall properly apply for, and adhere to backflow and metering requirements.

Temporary Meters for Construction - All temporary meters for construction will be equipped with an approved double check valve assembly.

NOTE: Any device, equipment, or situation not covered by this cross-connection policy, which may constitute a potential health hazard, will be examined for appropriate treatment by the Broad Creek PSD.

XVI. Thermal Protection

Owner Responsibility

All water systems that have been closed or contained by the installation of a backflow preventer or similar checking device must make necessary alterations to the plumbing system to protect against thermal expansion.

If water is heated and stored in a consumer's system, in which any branch or all of the system has been closed by the installation of a backflow preventer, a pressure reducing valve, or any other checking device, an approved auxiliary relief valve shall be installed at an accessible location between the checking device and the water heating equipment, to limit thermal expansion of the water being heated to not more than 80 pounds per square inch no-flow pressure at any fixture on the system. A discharge line not less than 1/4-inch inside diameter shall be piped to an approved location where no water damage would result from the discharge, and any water in the discharge pipe would drain by gravity, and be protected from freezing.

The installation of a device to control thermal expansion will be the responsibility of the owner and plumbing official having jurisdiction.

XVII. Plan Review

7.1 Drawing Submittals

Three sets of plans and specifications for the backflow prevention installation must be submitted to the Broad Creek PSD for approval prior to installation of the device.

7.2 Design Specifications

Any Backflow prevention device required shall be a model and size approved by the Broad Creek PSD. A list of approved backflow prevention assemblies shall be maintained by the Broad Creek PSD and may be revised or supplemented by order of the General Manager.

XVIII. Non-compliance - Enforcement Procedures

8.1 Enforcement Procedures

Non-compliance and enforcement procedures will fall into three (3) categories:

A. Existing water customers who do not have a cross-connection control device in their system at present, will be required to install such a device under this ordinance. Customers in this category where contaminants on their property has been determined by Broad Creek PSD to represent a high hazard public water will be required to take immediate corrective action upon notification. Customers will be required to install approved backflow prevention devices within one year of notification when the General Manager has determined that a potential high hazard exists or within two years for a potential low hazard condition.

B. Any new water customer after the effective date of the cross-connection control policy, will be required to install an approved backflow prevention device prior to connection to the Broad Creek PSD water systems whenever the General Manager has determined that contaminants, or pollutants on the customer's property represent a hazard to the public water system.

C. Those existing water customers which are required and have backflow prevention devices in their system which do not meet Broad Creek PSD standards or have been found to be malfunctioning. These customers will be required to replace backflow prevention devices which do meet Broad Creek PSD Standards. Malfunctioning backflow preventers for low hazard conditions must be repaired or replaced by the customers with an approved backflow prevention device within 30 days after notification by the Broad Creek PSD. For high hazard sources, the malfunctioning backflow device must be replaced or repaired immediately.

XIX . Termination of Water Service

- A. Service of water to any premises will be discontinued by Broad Creek PSD if a backflow prevention device required by law, rules, or regulations is not installed, tested, and maintained; or if it is found that a backflow prevention device has been removed or by-passed; or if unprotected cross-connection exists on the premises and there is inadequate backflow protection at the service connections. Water service will not be restored until such conditions or defects are corrected.

- B. Water services will be terminated for water customers who do not comply with the Cross-Connection Policy. A written notice shall be served to the offending party that water services will be terminated within ten (10) days if the requirements of this policy are met.

- C. The water customer shall notify the Broad Creek PSD in writing within five (5) days to appeal contamination action. The Broad Creek PSD shall convene a hearing within ten 10 days of receipt of the written notice (unless a later date is mutually agreed to) to hear the appeal of the water customer. Failure to appeal will result in entry of an order directing termination of water service.

XX. Legal Action

After the evidence has been reviewed by the hearing authority and a decision entered with a copy to the customer, the Broad Creek PSD may terminate water service and/or pursue any available legal remedy.

XXI. Penalty: Costs

The penalty for violating this Policy shall not be more than one-thousand dollars for each violation. Each day on which a violation shall occur or continue shall be deemed a separate and distinct offense.

XXII. Installation Requirements

A. Installation at Right-of-way or Easement

All backflow prevention devices and water meters will be installed within the right-of-way or easement. Any deviation from this directive must have prior approval under special conditions, from the Broad Creek

PSD.

B. Installation Within the Building Establishment

Under special conditions, only backflow prevention devices will be allowed within the building establishments. These conditions include:

1. No connection between the tap at the Broad Creek PSD main to the backflow preventer is allowed.
2. Backflow preventer will not be installed in an area where discharge can cause damage. A small, occasional discharge from the vent is normal. Heavy discharge may occur if the devices malfunction. An approved drain must be installed to collect any water discharged from the backflow preventer.
3. Any approved drain must have free air space between the vent port and the drain conduit (air gap).
4. Backflow prevention device must be installed in an area which is readily accessible for testing and maintenance. Installation in any confined area which is not conducive to normal maintenance activities is prohibited.
5. Should be parallel or horizontal.

XXIII. Responsibility for Operation and Maintenance

The owner will be responsible for operation and maintenance of the backflow preventer in addition to maintaining all appurtenances down-stream of the water meter.

XXIV. Permits

The Broad Creek PSD shall not permit a cross connection within the public water supply system unless it is considered necessary and that it cannot be eliminated.

- A. Cross connections permits that are required for each backflow prevention**

device are obtained from the Broad Creek PSD.

B. Permits are non-transferable. Permits are subject to revocation and become immediately revoked if the Owner should so change the type of cross connection or degree of hazard associated with the service.

C. A permit is not required when fixture isolation is achieved with the utilization of a non-testable backflow preventer.

XXV. Existing In-use Backflow Prevention Devices

Any existing backflow preventer shall be allowed by the Broad Creek PSD to continue in service unless the degree of hazard is such to supercede the effectiveness of the present backflow preventer or results in an unreasonable risk to the public health. Where the degree of hazard has increased, as in the case of a residential installation converting to a business establishment, any existing backflow preventer must be upgraded to a reduced pressure principle device, or a reduced pressure principle device must be installed in the event that no backflow device was present.

XXVI. Periodic Testing

A. Reduced pressure principle backflow devices shall be tested and inspected at least annually. It shall be the duty of the water user on any premises which backflow protection devices are installed, with the exception of dual check assemblies, to have a certified inspection made at least once a year.

B. Periodic testing shall be performed by the Owner. This testing will be done by a certified tester who's certification shall be on file at the Broad Creek PSD's office. This testing shall be at the owner's expense.

C. Any backflow preventer which fails during a periodic test will be repaired or replaced. When repairs are necessary, upon completion of the repair the device will be re-tested at owners expense to insure correct operation. High hazard situations will not be allowed to continue unprotected if the backflow preventer fails the test and cannot be repaired immediately. In other

situations, a compliance date of not more than thirty (30) days after the test date will be established, The owner is responsible for spare parts, repair tools, or a replacement device. Parallel installation of two (2) devices is an effective means of the owner insuring that uninterrupted water service during testing or repair of devices and is strongly recommended when the owner desires such continuity.

D. Backflow prevention devices will be tested more frequently than specified in A, above, in cases where there is a history of test failures and the Broad Creek PSD feels that due to the degree of hazard involved, additional testing is warranted. Cost of the additional test will be born by the owner.

XXVII. Separate Drinking Water Systems

Whenever the Broad Creek PSD determines that it is not practical to protect drinking water systems on premises against entry of water from a source of piping system or equipment that cannot be approved as safe or potable for human use, an entirely separate drinking water system shall be installed to supply water at points convenient for consumers.

XXVIII. Fire Systems

Water systems for fighting fire, derived from a supply that cannot be approved as safe or potable for human use shall, wherever practicable, be kept wholly separate from potable water pipelines and equipment. In cases in which the domestic water system is used for both potable and fire fighting purposes, approved backflow prevention devices shall be installed to protect such individual potable water lines as are not used for fire fighting purposes. It is hereby declared that it is the responsibility of the person or persons causing the introducing of said unapproved or unsafe water into the pipelines to see:

1. that a procedure be developed and carried out to notify and protect this piping system during the emergency;
2. that special precautions be taken to disinfect thoroughly and flush out all pipelines which may become contaminated before they are again used to

furnish potable water.

In the event that means of protection of water consumers is by disinfecting of the auxiliary fire fighting supply, the installation and its use shall be thoroughly reliable.

XXIX. Process Waste

Potable water pipelines connected to equipment for industrial processes or operations shall be disconnected therefrom if practicable. Where disconnection is not practicable, a suitable backflow prevention device located beyond the last point from which potable water may be taken shall be provided on the feed line to process piping or equipment. In the event the particular process liquid is especially corrosive or apt to prevent reliable action of the backflow prevention device, air gap separation shall be provided. Records of test, repairs, and replacement shall be kept and made available to the Broad Creek PSD and/or SCDHEC, when requested..

XXX. Sewage Treatment Plants and Pumping Stations

Sewage pump shall not have priming connections directly off any potable water system.

XXXI. Plumbing Connections

Where the circumstances are such that there is special danger to health by the backflow of sewage, as from sewers, toilets, hospital bedpans, and the like, into a potable water system, a dependable device shall be installed to prevent such backflow.

XXXII. Pier and Dock Hydrants

Backflow protection by a suitable backflow protection device shall be provided on each striking water pier head outlet used from supply vessels at piers or water fronts. These assemblies must be located where they will prevent the return of any water from the vessel into the potable water pipeline or any other adjacent vessel.

XXXIII. Marking Safe and Unsafe Water Services

Where premises contain dual or multiple water systems and piping, the exposed portions of the pipeline shall be painted, banded, or marked at sufficient intervals to distinguish clearly which water is safe and which water is not safe for potable use. The only dual systems allowed within the Broad Creek PSD are those which utilize reclaimed water for irrigation. All areas where reclaimed water is utilized for landscape irrigation, a closed system that is separated from the potable system is required. Any exposed piping within the system shall be painted red. Reclaimed water meters and other appurtenance within the meter box shall also be painted red. All landscaped areas being irrigated with reclaimed water shall be clearly posted with signs having red background with lettering reading as follows:

**Reclaimed Water Used for Irrigation
Do Not Drink
Broad Creek Public Service District**

XXXIV. Water Supervisor

The SCDHEC and the Broad Creek PSD shall be kept informed of the identity of the person responsible for the water piping on all premises concerned with these regulations. At each premise where it is necessary in the opinion of the SCDHEC, a water supervisor shall be designated. This water supervisor shall be responsible for the installation and use of pipelines and equipment and for the avoidance of cross connections.

In the event of contamination or pollution of the potable water supply system due to a cross connection on the premises, the Broad Creek PSD and SCDHEC shall be promptly advised by the person responsible for the water system so that appropriate measures may be taken to overcome the contamination.

Broad Creek PSD personnel will then react to a backflow incident by taking the following steps:

1. Cut off the water at the water service entrance of the affected area or facility as quickly as possible.
2. Start sampling at or as near to the suspected problem as quickly as

possible.

3. Notify all known or potentially affected customers immediately. Special notification shall be given to hospitals and kidney dialysis centers, since contamination of their water may be especially hazardous.
4. Notify DHEC District Office concerning the loss of pressure and/or possible contamination of the public water supply system due to this incident.
5. Interview those involved and attempt to discover the cause of the problem.
6. Begin flushing and sampling the affected area and continue to sample for suspected problems.
7. Continue to sample, flush and chlorinate as needed before resuming service to that facility, customer, or area.
8. Write up incident, documenting the problem, and take corrective measures to prevent it from recurring in the future.

XXXV. Records and Reports

A. Records

The Broad Creek PSD will initiate and maintain the following:

1. Master files on customer cross connection test and/or inspections.
2. Master files on cross connection permits
3. Copies of permits and permit applications.
4. Copies of lists and summaries supplied to the Broad Creek PSD.

B. Reports

The Broad Creek PSD will submit the following to SCDHEC:

1. Initial listing of low hazard cross connections to the State.
2. Initial listing of high hazard cross connection to the State.
3. Annual update list of item 1 and 2.
4. Annual summary of cross connection inspections to the State.

XXXVI. Fees and Charges

The Broad Creek PSD will publish a list of fees or charges for the following services or permits:

1. Testing Fees
2. Re-testing Fees
3. Fees for re-inspection
4. Charges for after-hours inspections or test.

XXXVII. Notice to Owners:

1. Installation of residential dual check device immediately downstream of the water meter results in a potential closed plumbing system within the residence. As such, provisions may have to be made by the owner to provide for thermal expansion within his closed system, i.e., the installation of thermal expansion devices and/or pressure relief valves.

2. The Broad Creek PSD strongly recommends that all new retrofit installations of reduced pressure principle devices and double check valve backflow preventers include the installation of strainers located immediately upstream of the backflow device. The installation of strainers will preclude the fouling of backflow devices due

to both foreseen and unforeseen circumstances occurring to the water supply system such as water main repairs, water main breaks, fires, periodic cleaning and flushing of mains, etc. These occurrences may “stir up” debris within the water main that will cause fouling of backflow devices installed without the benefit of strainers.

SUPPLEMENT "A"

**State Primary Drinking Water Regulations
As Amended April 29, 2005**

R.61-58.7(F)

STATE PRIMARY DRINKING WATER REGULATIONS
AS AMENDED APRIL 29, 2005
R.61-58.7(F)

F. Cross Connection Control

(1) General

(a) All public water systems shall initiate and maintain a viable cross connection control program. Such a program shall consist of:

(i) Locating and eliminating unprotected cross connections.

(ii) Maintaining records pertaining to the location of existing backflow prevention assemblies, type and size of each assembly and annual test results.

(b) No person shall install, permit to be installed or maintain any cross connection between a public water system and any other non-public water system, sewer or a line from any container of liquids or other substances, unless an approved backflow prevention device or assembly is installed between the public water system and the source of contamination.

(2) Low Hazard Cross Connections

A connection between an approved public water system and another water source not hazardous to health but not meeting the standards of the approved public water system and not cross-connected within its system with a potentially dangerous substance shall be considered a low hazard category cross connection. At a minimum, an approved Double Check Valve Assembly or Pressure Vacuum Breaker must be installed on a low hazard cross connection except as provided for in section 3 below.

(3) Residential Lawn Irrigation Systems

(a) Low hazard residential lawn irrigation systems - Each public water system which has low hazard residential irrigation systems directly or indirectly connected to their public water system must have a written low hazard residential lawn irrigation system cross connection control policy. This policy must be documented in writing and must be approved by the governing body of the public water system. The policy must specify the minimum acceptable device for low hazard residential lawn sprinkler systems. The minimum acceptable device for low hazard residential lawn sprinkler systems is a residential dual check. If a water system specifies another backflow prevention assembly as the minimum acceptable protection for these cross connections, the policy must be approved by the governing body of the public water system with due opportunity being provided for public comment and participation. The written policy must:

(i) Identify the type of backflow prevention device or assembly that is required to be installed on low hazard residential lawn irrigation system connections.

(ii) Establish a schedule for the required testing of double check valve

assemblies, or other testable assembly, if testable assemblies are designated by the policy as minimum acceptable protection for low hazard residential lawn irrigation systems. The minimum testing frequency must be specified in the policy and appropriate records must be maintained to verify compliance with the established testing requirements.

(iii) Establish a schedule for the required change out of residential dual checks if these are the devices designated by the policy as minimum acceptable protection for low hazard residential lawn irrigation systems. The minimum change out frequency must be specified in the policy and appropriate records must be maintained to verify compliance with the established change out requirements.

(b) High hazard residential lawn irrigation systems – Any residential lawn irrigation system that includes chemical addition, or is also connected to another water source which is not an approved public water system, shall be considered a high hazard cross connection and must meet the requirements of paragraph (4) below.

(4) High Hazard Cross Connections

(a) A connection between an approved public water system and a service or other water system which has or may have any material in the water dangerous to health, or connected to any material dangerous to health, that is or may be handled under pressure, or subject to negative pressure, shall be considered a high hazard category cross connection. Protection shall be by air gap separation or an approved reduced pressure principle backflow prevention assembly.

(b) Reduced pressure principle backflow prevention assemblies shall not be installed in any location subject to possible flooding. This includes pits or vaults which are not provided with a gravity drain to the ground's surface that is capable of exceeding the discharge rate of the relief valve.

(5) Fire Sprinkler Systems

Fire line sprinkler systems, except those in the high hazard category shall be protected by an approved double check valve assembly. High hazard fire sprinkler systems shall include, but not be limited to: antifreeze systems, foam systems, systems charged from or tied into ponds, lakes, streams, or any water source other than the approved public water supply. High hazard category fire sprinkler systems shall comply with the requirements of Paragraphs (4) above.

(6) Approved Devices and Assemblies

The Department shall prepare and publish a list of backflow prevention assemblies approved by the Department for use in S.C., and this list shall be updated at least once annually.

(7) Testing Requirements

When double check valve assemblies, pressure vacuum breakers, and/or reduced pressure principle backflow prevention assemblies are installed to protect a public water system against the possibility of backflow from a customer's water service, routine testing of the assemblies shall be performed by a certified tester.

- (a) Each assembly shall be tested by a certified tester after installation and before use by the customer. Except as specified in paragraph 3(a)(ii) above, each assembly shall be tested at least once annually by a certified tester.
- (b) The public water system is to receive a written report of the inspection and testing results for all assemblies tested within its distribution system. The report shall be submitted by the certified tester making the inspection and test.
- (c) All backflow prevention assemblies shall be tested immediately after repairs of any kind are made to the assembly.

(8) Backflow Prevention Tester Certification

There are four (4) types of certified testers of backflow prevention assemblies; General Tester, Limited Tester, Inspector Tester, and Manufacturer's Agent. The definition of each type of certified tester is specified in R.61-58(A).

- (a) Each certified tester's license shall expire three (3) years from the date of issue. In order to renew this certification for three (3) more years, the tester shall come before a designated person approved by the Department and shall successfully complete a written examination with a passing score of 70%, and perform the prescribed test on an approved reduced pressure principle backflow prevention assembly, double check valve assembly, and a pressure vacuum breaker using the tester's own differential pressure gauge. The gauge must be accurate within 2% of full scale or ± 0.3 pounds per square inch differential (PSID). Any gauge found to be inaccurate or malfunctioning will be required to be calibrated or repaired as needed to bring it into compliance before certification will be renewed.
- (b) Any applicant for certification who fails to properly perform the above prescribed tests will have his certification revoked immediately and will have to successfully complete the state sponsored backflow prevention training and certification course in order to become re-certified as a tester of backflow prevention assemblies in South Carolina.
- (c) A certified tester may have his tester's certification revoked due to incompetence or falsification of test results, as determined by the Department.
- (d) The Department shall reserve the right to charge or allow for the charge of a nominal fee for the administration of the recertification of testers. This fee shall not exceed fifty dollars (\$50.00).

(9) Installations of Pressure Vacuum Breakers

Where used, pressure vacuum breakers shall be installed at a minimum of 12" inches above the highest downstream piping and shall not be subject to backpressure.

SUPPLEMENT "B"

SCDHEC List of Approved Backflow Prevention Devices

February 26, 2014

**NOTICE OF APPROVED BACKFLOW
PREVENTION ASSEMBLIES FOR SOUTH CAROLINA**

Enclosed is the revised list of approved backflow prevention assemblies and a list of backflow equipment representatives.

The following should be considered before selecting a particular assembly:

1. All local plumbing laws and regulations must be adhered to.
2. Manufacturer's installation instructions shall be strictly adhered to.
3. Reduced pressure principle assemblies shall be installed so that the relief port will never become submerged. This prohibits installation in a pit that cannot be drained by gravity to the surface of the ground. Also, RPPA are not acceptable for the vertical orientation unless approved by the University of Southern California's Foundation for Cross Connection Control & Hydraulic Research.
4. The operating performance of these assemblies varies among manufacturers; therefore, it suggested that local water authorities be contacted to assist in selecting an assembly which is best suited for that particular system.
5. The South Carolina Department of Health and Environmental Control reserves the right to add or to remove from the approved list any reduced pressure principle assembly, pressure vacuum breaker, or double check valve assembly.
6. It is a requirement that backflow prevention assemblies be tested immediately after installation and at least once a year thereafter. If a serious defect is discovered at the time of the first (immediate inspection after installation) inspection or after any subsequent inspections, it is requested that the Department of Health and Environmental Control be notified so prompt action can be taken to review the approved status of the assembly.
7. By-pass piping is not permitted unless the by-pass piping is equipped with an approved backflow prevention assembly similar to the main line assembly. In many instances it will be desirable, or necessary to install two approved backflow prevention assemblies in order that water service will not be interrupted during the testing or repair of the assembly.

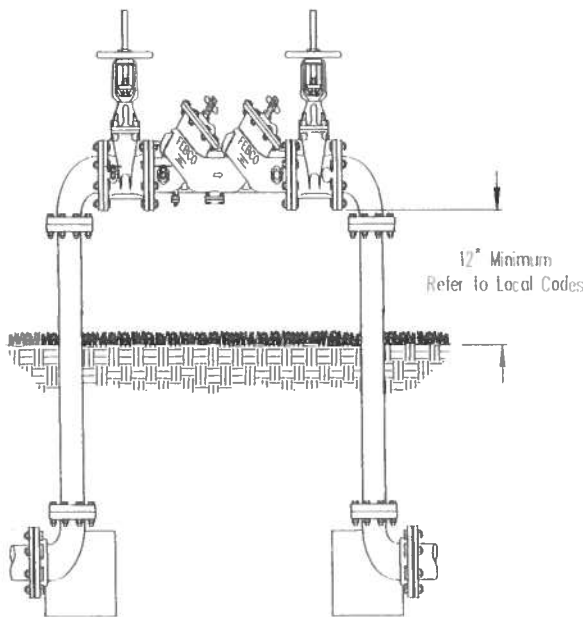
8. Some manufacturers market, as non-standard equipment, assemblies capable of withstanding elevated temperatures. The high temperature assemblies should be ordered from the manufacturer to include documentation certifying their ability to withstand high temperatures.

9. Any reduced pressure principle assembly, pressure vacuum breaker, or double check valve assembly on this list of approved assemblies must be equipped with either resilient seated ball valves or resilient wedged gate valves. Butterfly valves are acceptable on backflow assemblies as long they are approved by the University of Southern California's Foundation for Cross Connection Control & Hydraulic Research.

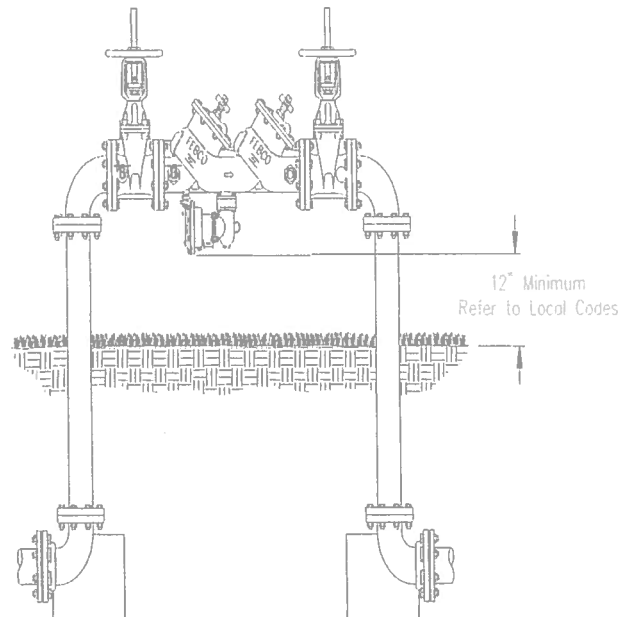
10. If a manufacturer markets a prefabricate "manifold" series it will be approved as long as both of the assemblies in the manifold are from the approved list.

11. If a manufacturer markets a double detector check valve assembly or a reduced pressure principle detector assembly it will be approved as long as both assemblies are from the approved list. Both assemblies (main line assembly and by-pass assembly) must be assembled by the manufacturer and shipped as a complete assembly. Any alterations of this assembly in the field must meet manufacturer's specifications and/or the USCFC&HR.

All assemblies on this approval list must be equipped with resilient seated ball valves or resilient wedged gate valves. Butterfly valves are acceptable on backflow assemblies as long as they are approved by (USCFCCC&HR).



Double Check Assembly
Outdoor Installation - OS&Y Gates



Reduced Pressure Assembly
Outdoor Installation - OS&Y Gates

SCDHEC

LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES

DOUBLE CHECK VALVE ASSEMBLIES

DCVA's are approved for use when protecting the potable water system from backflow when a low degree of hazard is involved. A low degree of hazard is one which may cause an actual or potential threat to the physical properties of the water system or the potability of the public or consumer's potable water system. However, a low degree of hazard would not constitute a health or system hazard. The maximum degree or intensity of pollution to which the potable water system could be degraded under this definition would cause a nuisance or be aesthetically objectionable.

<u>COMPANY</u>	<u>MODEL</u>	<u>SIZE</u>
Ames	2000B	½", ¾", 1", 1¼", 1½", 2"
	2000 (Epoxy)	4", 6", 8", 10"
	2000SS	¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10", 12"
	2000SE	2½", 6", 8"
	2001SS	3", 4", 6", 8"
	2001SSN	3", 4", 6", 8"
	2001SSZ	3", 4", 6", 8"
	Colt200	2½", 3", 4", 6", 8", 10"
	Colt200A	2½", 3", 4", 6", 8", 10"
	Colt200N	2½", 3", 4", 6", 8", 10"
	Colt200Z	2½", 3", 4", 6", 8", 10"
	Maxim200	2½", 3", 4", 6", 8"
	Maxim200A	2½", 3", 4", 6", 8"
	Maxim200N	2½", 3", 4", 6", 8"
	Maxim200Z	2½", 3", 4", 6", 8"
Beeco-Hersey	#2	3", 4", 6", 8", 10"
	FDC	¾", 1", 1½", 2"
	HDC	¾", 1", 1½", 2"
Buckner	24100 thru 24104	¾", 1", 1¼", 1½", 2"
Cash Acme	DC 100	¾", 1", 1 ½", 2"
	DC 500	¾", 1"
Cla-Val	D2	¾", 1", 1¼", 1½"
	D4	2", 2½", 3", 4", 6", 8", 10"
	DC6LB	¾", 1", 1½", 2"
	DC6LW	¾", 1", 1½", 2"
	DC7LW	2½", 3", 4", 6", 8", 10"

DOUBLE CHECK VALVE ASSEMBLIES CONTINUED:

<u>COMPANY</u>	<u>MODEL</u>	<u>SIZE</u>	
Cla-Val	DC7LY	2½", 3", 4", 6", 8", 10"	
	DC8LW	2½", 3", 4", 6", 8", 10"	
	DC8LY	4", 6", 8"	
	DC8NW	2½", 3", 4", 6", 8", 10"	
	DC8NY	2½", 3", 4", 6", 8"	
	DC8VW	2½", 3", 4", 6"	
	DC8VY	2½", 3", 4", 6"	
	Conbraco/Apollo	4S	½"
40-100 Series		½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"	
40-104 A2T thru			
40-108 A2T		¾", 1", 1¼", 1½", 2"	
4S-100 Series		2½", 3", 4", 6", 8", 10"	
4SG-100		2½", 3", 4", 6", 8"	
DC4A		½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8"	
DCLF4A		½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8"	
DC4AN		2½", 3", 4", 6", 8"	
DCLF4AN		2½", 3", 4", 6", 8"	
Febco	805	¾", 1", 1½", 2", 3", 4",	
	805Y	¾", 1", 1½", 2", 2½", 3", 4", 6", 8", 10"	
	805YB & YR	¾", 1"	
	805YD	2½", 3", 4", 6", 8", 10"	
	850	¾", 1", 1½", 2", 2½", 3", 4", 6", 8"	
	LF850	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"	
	LF850U	½", ¾", 1", 1¼", 1½", 2"	
	870	2½", 3", 4", 6", 8", 10"	
	870V	2½", 3", 4", 6", 8", 10"	
	LF870V	2½", 3", 4", 6", 8"	
	830	4", 6", 8"	
	830H	4", 6"	
	Flomatic	DCV	¾", 1", 1½", 2", 2½", 3", 4", 6", 8"
		DCVE	¾", 1", 1½", 2"

DOUBLE CHECK VALVE ASSEMBLIES CONTINUED:

<u>COMPANY</u>	<u>MODEL</u>	<u>SIZE</u>	
Watts	709QT	3/4", 1", 1 1/2", 2", 2 1/2", 3", 4", 6", 8", 10"	
	709	2 1/2", 3", 4", 6", 8", 10"	
	719QT	3/4", 1", 1 1/4", 1 1/2", 2"	
	007	1/2", 3/4", 1", 1 1/4", 1 1/2", 2", 3"	
	007M1&M2QT	3/4", 1", 1 1/4", 1 1/2", 2"	
	007M3QT	3/4"	
	770	4", 6", 8"	
	772	4", 6", 8", 10"	
	774	3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 6", 8", 10"	
	774X	2 1/2", 6", 8"	
	Wilkins	775QT	1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
		775	3", 4", 6", 8"
		N775	3", 4", 6", 8"
		757A	2 1/2", 3", 4", 6", 8", 10"
757N		2 1/2", 3", 4", 6", 8", 10"	
767A		2 1/2", 3", 4", 6", 8"	
767N		2 1/2", 3", 4"	
350		3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 6", 8", 10", 12"	
350A		2 1/2", 3", 4", 6", 8", 10"	
350AR & ARXL		2 1/2", 3", 4", 6", 8", 10"	
350AST		2 1/2", 3", 4", 6", 8", 10"	
350 ASTR		2 1/2", 3", 4", 6"	
350XL		3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 6", 8", 10", 12"	
350AXL		2 1/2", 3", 4, 6", 8", 10"	
450 & XL		2 1/2", 3", 4", 6", 8", 10"	
950		3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 6", 8", 10"	
950A		3/4", 1", 1 1/4", 1 1/2", 2"	
950XLT		3/4", 1", 1 1/4", 1 1/2", 2"	
950XLTU		3/4", 1"	
950XL		3/4", 1", 1 1/4", 1 1/2", 2"	
950XLD		3/4", 2"	
950XLU		3/4", 1", 1 1/2", 2"	
950XLTDA & XLTDABF		2"	
950XLT2		3/4", 1", 1 1/2", 2"	
950XLT2U	3/4"		

The following assemblies are Double DETECTOR Check Valve Assemblies and Reduced Pressure Principle DETECTOR Assemblies. These assemblies are made up from DCVA's and RPPA's which are approved elsewhere on this list. These assemblies are designed for FIRE LINE use. If a Double Detector Check Valve Assembly or Reduced Pressure Principle Detector Assembly is prescribed, it should be done with an understanding that its meter will have to be read periodically in order to be of any value. Don't forget that when the annual testing is done, both of these assemblies are required to be tested (mainline dcva and by-pass dcva). Lastly, both assemblies (main line assembly and by-pass assembly) must be assembled by the manufacturer and shipped as a complete assembly. Any alterations of this assembly in the field must meet manufacturer's specifications and/or the USCFCCC&HR.

DOUBLE DETECTOR CHECK VALVE ASSEMBLIES ARE:

AMES - 3000SS, 3000SE, (3001SS & 3001SSN & 3001SSZ 3"-8"),
(Colt300 2½"-10") (Colt300A 2½"-10"), (Colt300N 2½"-10"),
(Maxim300 2½"-8"), (Maxim300N 2½"-8")
BEECO-HERSEY - DDCII
CLAVAL - DD7LY, DD8LY, DD8NY
CONBRACO/APOLLO - 40-600, 40-60A, 40-60C, 40-60E, 40-60G,
(4SG-600 2½"-8"), DA4S 10", (4A-600 2½"-8"), (4AN-600 2½"-8")
FEBCO - 806YD, 856, (856ST 2½"-10"), 876, 876V, (876VST 2½"-8"),
(831 4"-8"), (831H 4"-6")
WATTS - 007DCDA, 709DCDA, 770DCDA, 772DCDA, 774DCDA, and
774XDCDA, (775DCDA & N775DCDA 2½"-10"), (757DCDA 2½"-10")
(757NDCDA 2½"-10"), (767NDCDA 2½"-4")
WILKINS – (950DA 2½"-10"), (350DA 2½"-12"), (350ADA &
350ADAR 2 ½"-10"), (350ASTDA 2 ½"-10"), (450DA 4"-10")

REDUCED PRESSURE PRINCIPLE DETECTOR ASSEMBLIES ARE:

AMES- 5000SS, (5001SS & 5001SSN & 5001SSZ 3"-6"), (Colt500 2½"-
10") (Colt500A 2½"-10"), (Colt500N 2½"-10"), (Maxim500 2½"-8")
(Maxim500A 2½"-8"), (Maxim500N 2½"-8")
BEECO-HERSEY- 6CMDA
CLAVAL- RD7LY
CONBRACO/APOLLO- 40-700, 40-70A, 40-70C, 40-70E, 40-70G, (4A-
700 2½"-8), (4AN-700 2½"-8")
FEBCO- 826YD
WATTS- 009RPDA, 909RPDA, 990RPDA, 992RPDA, (957RPDA 2½"-
10"), (957NRPDA 2½"-10"), (967NRPDA 2½"-3")
WILKINS- (975DA 2½"-10"), (375DA 2½"-10"), (375ADA & 375ADAR
2 ½"-10"), (375ASTDA 2 ½"-4), (475DA 4"-8"), (475DAV 4"-8")

SCDHEC

LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES

REDUCED PRESSURE PRINCIPLE ASSEMBLIES

Approved for use to protect the potable water system from backflow when there is an actual or potential health hazard. The terms "health hazard" shall mean an actual or potential threat of contamination or pollution of a physical or toxic nature to the public potable water system or the consumer's potable water system to such a degree of intensity that there would be a danger to health.

<u>COMPANY</u>	<u>MODEL</u>	<u>SIZE</u>
Ames	4000B	½", ¾", 1", 1¼", 1½", 2"
	4000-RP	4", 6", 8", 10"
	4000SS	¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"
	4001SS	3", 4", 6"
	4001SSN	3", 4", 6"
	4001SSZ	3", 4", 6"
	Colt400	2½", 3", 4", 6", 8", 10"
	Colt400N	2½", 3", 4", 6", 8", 10"
	Colt400Z	2½", 3", 4", 6", 8", 10"
	Maxim400	2½", 3", 4", 6", 8", 10"
	Maxim400N	2½", 3", 4", 6", 8"
	Maxim 400Z	2½", 3", 4", 6", 8"
	Beeco-Hersey	6CM
6CM-Bronze		2½", 3", 4", 6", 8"
FRP-II		¾", 1", 1¼", 1½", 2"
Buckner	24000 thru 24004	¾", 1", 1¼", 1½", 2"
Cash Acme	RP 100	¾", 1", 1½", 2"
	RP 200	½", ¾"
	RP 500	¾", 1"
Cla-Val	RP-2	¾", 1", 1¼", 1½"
	RP-4	2", 2½", 3", 4", 6", 8", 10"
	RP-4V	4"
	RP6LW	¾", 1", 1¼", 1½", 2"
	RP6VW	¾", 1", 1½", 2"
	RP7LW	2½", 3", 4", 6", 8", 10"
	RP7LY	2½", 3", 4", 6", 8", 10"
	RP8LW	2½", 3", 4", 6", 8", 10"
	RP8LY	2½", 3", 4", 6", 8"

REDUCED PRESSURE PRINCIPLE ASSEMBLIES CONTINUED:

<u>COMPANY</u>	<u>MODEL</u>	<u>SIZE</u>
Cla-Val	RP8NW	2½", 3", 4", 6", 8", 10"
	RP8NY	2½", 3", 4", 6", 8"
	RP8VW	2½", 3", 4", 6", 8", 10"
	RP8VY	2½", 3", 4", 6"
Conbraco/Apollo	40-200 Series	¼", ⅜", ½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"
	Stainless {40-204-A2S	¾"
	Steel {40-205-A2S	1"
	RP4A	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8"
	RPLF4A	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8"
	RP4AN RPLF4AN	2½", 3", 4", 6", 8" 2½", 3", 4", 6", 8"
Febco	825	2½", 3", 4", 6", 8", 10"
	825D	2½", 3", 4", 6", 8", 10"
	825Y	¾", 1", 1¼", 1½", 2", 2½"
	LF825Y	¾", 1", 1½", 2"
	825YD	2½", 3", 4", 6", 10"
	825YA & YR	¾", 1", 1½", 2"
	LF825YA	¾", 1", 1½", 2"
	835B	¾", 1", 1½", 2"
	860	¾", 1", 1½", 2", 2½", 3", 4", 6", 8"
	LF860	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"
	LF860U	½", ¾", 1", 1¼", 1½", 2"
	880	2½", 3", 4", 6", 8", 10"
	880V	2½", 3", 4", 6", 8", 10"
	LF880V	2½", 3", 4", 6", 8"
Flomatic	RPZ	¾", 1", 1½", 2", 2½", 3", 4", 6", 8"
	RPZII	½", ¾"
	RPZE	¾", 1", 1½", 2"
Watts	909	2½", 3", 4", 6", 8", 10"
	909QT	¾", 1", 1¼", 1½", 2"
	919QT	½", ¾", 1", 1¼", 1½", 2"
	009	2½", 3", 4", 6"
	009QT	¼", ⅜", ½", ¾", 1", 1¼", 1½", 2"
	009M1 & M2QT 009M3QT	¾", 1", 1¼", 1½", 2" ¾"

REDUCED PRESSURE PRINCIPLE ASSEMBLIES CONTINUED:

<u>COMPANY</u>	<u>MODEL</u>	<u>SIZE</u>	
Watts	990	4", 6", 8"	
	992	4", 6", 8", 10"	
	994	¾", 1", 1½", 2", 2½", 3", 4", 6", 8", 10"	
	995	¾", 1", 1¼", 1½"	
	957	2½", 3", 4", 6", 8", 10"	
	957N	2½", 3", 4", 6", 8", 10"	
	957Z	2½", 3", 4", 6", 8", 10"	
	967	2½", 3", 4", 6", 8"	
	Wilkins	375	¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"
		375XL	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"
375XLB		¾", 1", 1½", 2"	
375A, AR, AXL, & ARXL		2½", 3", 4", 6", 8", 10"	
375AST		2½", 3", 4", 6", 8", 10"	
375ASTR		2½", 3", 4", 6"	
375ST		½", ¾", 1"	
375MS & XLMS		2½", 3", 4", 6", 8", 10"	
475		2½", 3", 4", 6", 8", 10"	
475XL, XLV, XLMS		2½", 3", 4", 6", 8", 10"	
475V, VMS, MS, & XLVMS		2½", 3", 4", 6", 8", 10"	
575		¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"	
975		¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"	
975A		¾", 1", 1¼", 1½", 2"	
975XLST		3/8", ½"	
975XL		¼", 3/8", ½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 6", 8", 10"	
975XL2		¼", 3/8", ¾", 1", 1¼", 1½", 2"	
975XL2V		¾", 1"	
975XL2MS & XL2BMS		¾", 1", 1¼", 1½", 2"	
975XL2TCU & XL2U		½", ¾", 1", 1¼", 1½", 2"	
975XL2SE & XL2SEU		¾", 1", 1½", 2"	
975XLD		¾"	
975XLV		¾", 1"	
975XLU		¾", 1", 1½", 2"	
975XLSE & XLSEU		¾", 1", 1¼", 1½", 2"	
975XLTCU & XLBMS		½", ¾", 1", 1¼", 1½", 2"	
975MS & BMS		2½", 3", 4", 6", 8", 10"	
975XLMS		¾", 1", 1¼", 1½", 2"	

SCDHEC

LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES

PRESSURE VACUUM BREAKERS

PVB's are approved for use when protecting the potable water system from backsiphonage only when a health hazard or non-health hazard is involved. The term "health hazard" shall mean an actual or potential threat of contamination or pollution of a physical or toxic nature to the potable water system or the consumer's potable water system to such a degree of intensity that there would be a danger to health. It is very important to understand that the PVB is not designed for backpressure. Also, the PVB must be installed 12" above any downstream plumbing.

<u>COMPANY</u>	<u>MODEL</u>	<u>SIZE</u>
Ames	A200	½", ¾", 1", 2"
Buckner	24199 thru 24204 24199/25 thru 24204/25	½", ¾", 1", 1¼", 1½", 2" ½", ¾", 1", 1¼", 1½", 2"
Conbraco/Apollo	40-503-02 thru 40-508-02 PVB4V PVB4A	½", ¾", 1", 1¼", 1½", 2" ½", ¾", 1", 1¼", 1½", 2" ½", ¾", 1", 1¼", 1½", 2"
Febco	765 745 LF767FR	½", ¾", 1", 1¼", 1½", 2" ¾", 1" ½", ¾", 1", 1¼", 1½", 2"
Flomatic	PVB	¾", 1"
Rain Bird	PVB-075-R thru 200-R	¾", 1", 1¼", 1½", 2"
Watts	800QT 800MQT 800CMQT 800M2QT 800M3QT 800M4FR 800M4QT	¾", 1", 1¼", 1½", 2" ½", ¾" ½", ¾" ½", ¾", 1", 1¼", 1½", 2" ½", ¾" ½", ¾", 1", 1¼", 1½", 2" ½", ¾", 1", 1¼", 1½", 2"
Wilkins	720A 420 420XL 460 460XL	½", ¾", 1", 1¼", 1½", 2" ½", ¾", 1" ½", ¾" 3/8", ½", ¾", 1" 3/8", ½", ¾", 1"

SUPPLEMENT "C"

SCDHEC List of Backflow Equipment Representatives

and

List of Backflow Prevention Re-Certification Stations

BACKFLOW EQUIPMENT REPRESENTATIVES

Conbraco / Apollo

Mr. Larry Castleberry / Mr. Joey Smith
Pro Marketing, Inc
110 Corporate Dr / Suite L
Spartanburg SC 29303
864-578-4334 / 864-415-8696

TMS

Mr. Rick Wade / Mr. Donnie Johnson
3540 Rutherford Rd
Taylors SC 29687
864-268-2891
800-476-2212

BAVCO

Mr. Jim Purzycki
20435 South Susana Rd
Long Beach, CA 90810
800-458-3492
310-639-5231

Beeco - Hersey

Mr. Tod Little
Mueller Company
1437 Heins Rd
Blythewood SC 29016
803-691-9431

American Backflow Products

Mr. Mark Inman
7580-A West Tennessee Street
Tallahassee, FL 32303
800-575-9618 / 850-576-1814

Febco

Mr. M. C. Sorrell / Mr. Bob Buddo
Lewis Marketing
1511 Ameron Drive
Charlotte, NC 28206
704-376-0262

Watts & Ames

Mr. Joel Golmont / Mr. Mike Davis
Smith & Stevenson
P. O. Box 240009
Charlotte, NC 28224
800-225-9895 / 704-525-3388

Wilkins

Mr. Craig Birchfield
Quality Marketing
3500-C Woodpark Blvd
Charlotte, NC 28206
704-599-9407

Flomatic

Mr. Josh Amon / Mr. John Amon
Preferred Sources
930 Culp Road
Pineville NC 28134
704-504-3111

Cash-Acme / Flomatic

Mr. Dan Hunt / Mr. Allen Scott
3401 Woodpark Blvd Suite B
Charlotte NC 28206
704-921-8422

If you should have any questions concerning this list or need any assistance concerning backflow prevention or cross connection control, please call or write:

Mr. John Watkins, Cross Connection Control Program Coordinator
SCDHEC / Bureau of Water
2600 Bull Street
Columbia, SC 29201
803-898-3567 phone
803-898-3795 fax

SCDHEC backflow web page: www.scdhec.net/environment/water/dwbflow.htm

BACKFLOW PREVENTION RE-CERTIFICATION STATIONS

It's time to renew your backflow prevention certification license. Below is a listing of the recertification stations in South Carolina. You must contact one of the recertification stations to schedule your recertification exam. The proctor will provide you with dates, costs, and locations of the next scheduled exam. For a copy of the study guide material, please go online to www.scdhec.net/environment/water/dwbflow.htm#recertification. Click on **(3 valve gauge study guide)** or **(5 valve gauge study guide)** and print the study guide that fits your testing equipment, "3" or "5" valve differential gauge. Make sure you read pages 4 & 5 because it will cover some of the questions on the written exam.

Mr. David Zorn
Zorn Consulting, LLC
Orangeburg Area
(803) 536-6387 or (803) 707-8153

Mr. Charles Clinemyer, JR
Greenwood CPW
Greenwood Area
(864) 942-8196

Mr. Harry Peart
Rock Hill Area
(803) 324-0927
(803) 417-1014

Mr. J.T. Johnson
J T Johnson Backflow
Cheraw Area
(843) 537-4230

Mr. Don Sondles
Charleston Water System
Charleston Area
(843) 727-6980

Mr. Alvin Ard
City of Florence RR
Florence Area
(843) 665-3236

Mr. Ed Makison
Anderson Regional Water
Anderson Area
(864) 332-0279 or (864) 332-6534

Mr. Jimmy Booth
Grand Strand Water & Sewer
Myrtle Beach / Conway Area
(843) 443-8214

Mr. Josh Goodlet
City of Columbia
Columbia Area
(803) 545-3876

Mr. Kenneth A. Davis
Spartanburg Area, Clinics held at
Inman Campobello Water
(864) 208-6334 or (864) 578-6365

Mr. Robert Bird
Seneca Light & Water
Seneca area
(864) 885-1625 or (864) 916-1501

If you have any questions, please contact Mr. John Watkins, SCDHEC, Bureau of Water, at (803) 898-3567 phone or (803) 898-3795 fax, or e-mail watkinjd@dhec.sc.gov.

SUPPLEMENT "D"

Definitions

Definitions

1. *Air-gap Separation*

The term “air-gap separation” shall mean a physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An “approved air-gap separation” shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel-in no case less than six-inches.

2. *Approved*

The term “approved” shall mean accepted by the Broad Creek PSD as meeting an applicable specification stated or cited in this regulation, or as suitable for the proposed use.

3. *Atmospheric Vacuum Breaker*

The term “atmospheric vacuum breaker” (also known as the non-pressure type vacuum breaker) shall mean a device containing a shut-off valve followed by a valve body containing a float check, a check seat and an air inlet port. When the shut-off valve is open the flow of water causes the float to close the air inlet port. When the shut-off valve is closed the float falls and forms a check valve against backsiphonage and at the same time opens the air inlet port.

4. *Auxiliary Water Supply*

The term “auxiliary water supply” shall mean any water supply, on or available, to the premises other than the purveyor’s approved public potable water supply.

5. *Backflow*

The term “backflow” shall mean the undesirable reversal of the flow of water or mixtures of water and other liquids, gases or other substance into the distribution pipes of the potable supply of water from any source or sources.

6. *Backflow Prevention Device-approved*

The term “approved backflow prevention device” shall mean a device that has been investigated and approved by the Broad Creek PSD and SCDHEC.

7. *Backflow Prevention Device-type*

A “backflow prevention device” shall mean any effective device used to prevent backflow into a potable water system. The type of device used should be based on the degree of hazard either existing or potential. The types are:

- a. Double Check Valve Assembly
- b. Pressure Vacuum Breaker
- c. Reduced Pressure Principle Assembly
- d. Atmospheric (non-pressure) Vacuum Breaker

8. *Back Pressure*

The term “back pressure” shall mean any elevation of pressure in the downstream piping system (by pump, elevation of piping, or stream and/or air pressure) above the supply pressure at the point of consideration which would cause- or tend to cause- a reversal of the normal direction of flow through the backflow prevention assembly.

9. *Backflow Preventer*

The term “backflow preventer” shall mean a device or means designed to prevent backflow or back-siphonage. Most commonly categorized as air gap, reduce pressure principle device, double check valve assembly, pressure vacuum breaker, atmospheric vacuum breaker, hose bibb vacuum breaker, residential dual check, double check with intermediate atmospheric vent, and barometric loop.

9.1 *Air Gap*

A physical separation sufficient to prevent backflow between the free flowing discharge end of the potable water system and any other system.

Physically defined as a distance equal to twice the diameter of the supply side pipe diameter but never less than six (6) inch.

9.2 *Atmospheric Vacuum Breaker*

A device which prevents back-siphonage by creating an atmospheric vent when there is either a negative pressure or sub-atmospheric pressure in a water system.

9.3 *Barometric Loop*

A fabricated piping arrangement rising at least thirty five (35) feet at its topmost point above the highest fixture it supplies. It is utilized in water supply systems to protect against back-siphonage.

9.4 *Double check Valve Assembly*

An assembly of two (2) independent operating spring loaded check valves with tightly closing shut off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve.

9.5 *Double Check Valve with Intermediate Atmospheric Vent*

A device having two (2) spring loaded check valves separated by an atmospheric vent chamber.

9.6 *Hose Bibb Vacuum Breaker*

A device which is permanently attached to a hose bibb and which acts as an atmospheric vacuum breaker.

9.7 *Pressure Vacuum Breaker*

A device containing one or two independently operated spring loaded check valves and an independently operated spring loaded air inlet valve located on the discharge side of the check or checks. Device includes

tightly closing shut off valves on each side of the check valves and properly located test cocks for the testing of the check valve(s).

9.8 *Reduced Pressure Principle Backflow Preventer*

An assembly consisting of two (2) independently operating approved check valves with an automatically operating differential relief valve located between the two (2) check valves, tightly closing shut-off valves on each side of the check valves plus properly located test cocks for testing of the check valves and the relief valve.

9.9 *Residential Dual Check*

An assembly of two (2) spring loaded, independently operating check valves without tightly closing shut-off valves and test cocks. Generally employed immediately downstream of the water meter to act as a containment device.

10. *Backpressure*

The term "backpressure" shall mean a condition in which the owners system pressure is greater than the suppliers system pressure.

11. *Back-siphonage*

The term "backsiphonage" shall mean a form of backflow due to a reduction in system pressure which causes a negative or sub-atmospheric pressure to exist at a site in the water system.

12. *Consumer*

The term "consumer" shall mean the owner or operator of a private water system having a service from a public potable water system.

13. *Containment*

The term "containment" shall mean a method of backflow prevention which requires a backflow prevention preventer at the water service entrance.

14. *Contamination*

The term “contamination” shall mean an impairment of the quality of the water which creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids or waste.

15. *Contaminant*

The term “contaminant” shall mean a substance that will impair the quality of the water to a degree that is creates a serious health hazard to the public leading to poisoning or the spread of disease.

16. *Cross-connection*

Any actual or potential connection between the public water supply and a source of contamination or pollution. The term “cross-connection” shall mean any unprotected actual or potential connection or structural arrangement between a public or a consumer’s potable water system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent devices through which or because of which “backflow” can or may occur are considered to be cross-connections.

17. *Cross-connection-point of*

The term “point of cross connection” shall mean the specific point of location in a public or a consumer’s potable water system where a cross-connection exists.

18. *Director*

The term Director shall pertain to the Director of the SC Department of Health and Environmental Control.

19. *District*

The Broad Creek Public Service District

20. *Fixture Isolation*

A method of backflow prevention in which a backflow preventer is located to correct a cross connection at an in-plant location rather than at a water service entrance.

21. *Hazard-degree of*

The term "degree of hazard" shall be derived from the evaluation of a health, system, plumbing or pollution hazard.

22. *Health-hazard*

The term "health hazard" shall mean an actual or potential threat of contamination of a physical or toxic nature to the public potable water system or the consumer's potable water system that would be a danger to health.

23. *Hazard - Plumbing*

The term "plumbing hazard" shall mean an internal plumbing type cross-connection in a consumer's potable water system that may be either a pollution or a contamination type hazard. This includes but is not limited to cross-connections to toilets, sinks, lavatories, wash trays, domestic washing machines and lawn sprinkling systems. Plumbing type cross-connections can be located in many types of structures including homes, apartment houses, hotels and commercial or industrial establishments. Such a connection, if permitted to exist, must be properly protected by an appropriate type of cross-connection control device.

24. *Hazard-pollution*

The term "pollution hazard" shall mean an actual or potential threat to the physical properties of the water system or the potability of the public or the consumer's potable water system but which would not constitute a health or system hazard, as defined. The maximum degree or intensity of pollution to which the potable water system could be degraded under this definition would

cause a nuisance or be aesthetically objectionable or could cause minor damage to the system or its appurtenances.

25. *Hazard- System*

The term "system hazard" shall mean an actual or potential threat of severe danger to the physical properties of the public or the consumer's potable water system or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

26. *Hospital*

The term "hospital" shall mean any institution, place, building, or agency which maintains and operates facilities for one or more persons for the diagnosis, care and treatment of human illness, including convalescence and care during and after pregnancy or which maintains and operates organized facilities for any such purpose, and to which persons may be admitted for overnight stay or longer. The term "hospital" includes sanitarium, nursing home and maternity home.

27. *Industrial Fluids*

The term "industrial fluids" shall mean any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollution or plumbing hazard if introduced into an approved water supply. This may include, but not be limited to: polluted or contaminated used waters; all types of process waters and "used waters" originating from the public potable water system which may deteriorate in sanitary quality; chemicals in fluid form; plating acids and alkalies; circulated cooling waters connected to an open cooling tower and/or cooling waters that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters such as from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, etc.; oils, gases, glycerine, paraffins, caustic and acid solutions and other liquid and gaseous fluids used in industrial or other processes or for fire fighting purposes.

28. *Industrial Piping System- Consumer's*

The term "consumer's industrial piping system" shall mean any system used by the consumer for transmission of or to confine or store any fluid, solid or gaseous substance other than an approved water supply. Such a system would include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey or store substances which are or may be polluted or contaminated.

30. *Isolation*

The term "isolation" shall mean the installation of a backflow preventer or a vacuum breaker at each cross-connection on the premises to protect both the premises and the public supply.

31. *Laboratory-approved Testing*

Reference to an "approved testing laboratory" shall mean the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California or another laboratory having equivalent capabilities for both the laboratory and field evaluation of the devices.

32. *Owner*

The term "Owner" shall mean any person who has legal title to, or license to operate or habitat in, a property upon which a cross connection inspection is to be made or upon which a cross connection is present.

33. *Person*

The term "person" shall mean any individual , partnership, company, public or private corporation, political subdivision or agency or the State Department, agency or instrumentality or the United States or any other legal entity.

34. *Permit*

The term "permit" shall mean a document issued by the Broad Creek PSD which allows the use of a backflow preventer.

35. *Point of Delivery*

(See "Service Connection".)

36. *Pollutant*

The term "pollutant" shall mean a foreign substance, that if permitted to get into the public water system, will degrade its quality so as to constitute a moderate hazard, or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably effect such water for domestic use.

37. *Pollution*

The term "pollution" shall mean an impairment of the quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

38. *Service Connection*

The term "service connection" shall mean the terminal end of a service connection from the public potable water system. i.e. where the water purveyor may lose jurisdiction and sanitary control over the water at its point of delivery to the consumer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter.

39. *Water-potable*

The term "potable water" shall mean water from any source which has been investigated by the health agency having jurisdiction, and which has been approved for human consumption.

40. *Water Purveyor*

The term "water purveyor" shall mean the public or private owner or operator of the potable water system supplying an approved water supply to the public.

41. *Water Service Entrance*

The term “water service entrance” shall mean that point in the owners water system beyond the sanitary control of the Broad Creek PSD; generally considered to be the outlet end of the water meter and always before any unprotected branch.

42. *Water Supply - Approved*

The term “approved water supply” shall mean any public potable water supply which has been investigated and approved by the SC Department of Health and Environmental Control or the local health agency having jurisdiction. The system must be operating under a valid health permit. In determining what constitutes an approved water supply, the SC Department of Health and Environmental Control has reserved final judgement as to its safety and potability.

43. *Water Supply - Auxiliary*

The term “auxiliary water supply” shall mean any water supply on or available to the premises other than the purveyor’s approved public potable water supply. These auxiliary waters may include water from another purveyor’s public potable water supply of any natural source such as a well, spring, river, harbor, etc., or “used water” or “industrial fluids”. They may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

44. *Water System - Public Potable*

The term “public potable water system” shall mean any publicly or privately owned water system operated as a public utility under a valid health permit to supply water for domestic purposes. This system will include all sources, facilities and appurtenances between the source and the point of delivery such as valves, pumps, pipe conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, treat or store a potable water for public consumption or use.

45. *Water - Reclaimed*

The term "reclaimed water" shall mean any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the service connection and/or fixture outlet and is no longer under the control of the water purveyor and which has been treated for re-use as irrigation water.

46. *Water Supervisor*

The term "water supervisor" shall mean the consumer or a person on the premises appointed by him charged with the responsibility of maintaining the consumer's water system(s) on the property free from cross-connections and other sanitary defects, as required by regulations and laws. A certified backflow prevention device tester may not act as a water supervisor unless he is a full-time employee of the consumer having the day-to-day responsibility for the installation and use of pipelines and equipment on the premises and for avoidance of cross-connections.

47. *SCDHEC*

The term "SCDHEC" shall mean the State of South Carolina Department of Health and Environmental Control and may be abbreviated "DHEC".

SUPPLEMENT "E"

**Typical Facilities, Cross Connection or Water Use Which May Endanger the Public
Water Supply**

Typical Facilities, Cross Connections or Water Uses Which May Endanger the Public Water System

The following conditions and problems should be reviewed in all cases where the regulatory agency adopts a policy of requiring that the "degree of hazard" be based on a complete inspection of the consumer's water-using facilities. For convenience, these conditions have been divided into three groups. Group I includes cross-connections typical to certain industries or uses. Group II includes potential cross-connections involving water-using fixtures, equipment, facilities, etc., grouped in associated categories. Group III lists chemicals and chemical compounds used in water treatment, hydraulically distributed in the consumer's water system or used in conjunction with water by industry. The following are intended to be representative but not all inclusive.

A. Group I Includes Cross-connections Typical to Certain Industries or Uses

Hazards normally to be found in connection with the operation of an average water system include:

1. Sewerage Systems

Cross Connections to sewage or surface water pumps for priming, cleaning, flushing or unclogging purposes.

Water-operated sewage sump ejectors for operational purposes.

Sewers for the purpose of disposing of filter or softener backwash water or water from cooling systems or for the purpose of providing for a quick drain for the building water lines or of flushing or blowing out obstructions in the sewer lines, etc. (NOTE: most State regulations require backflow protection at the service connection to any premises on which there is located a sewage or pumping station, even though there are no cross-connections.)

2. Reservoirs, Cooling Towers, Etc.

Reservoirs, cooling towers and circulating systems which may be heavily contaminated either with bird droppings, vermin, algae, bacterial slimes or with toxic water treatment compounds such as pentachlorophenol, copper, chromates, metallic glucosides, compounds of mercury, quaternary ammonium compounds, etc.

3. Industrial Fluid Systems

Industrial fluid systems and lines containing cutting and hydraulic fluids, coolants, hydrocarbon products, glycerin, paraffin, caustic and acid solutions, etc.

4. Fire Fighting Systems

Fire fighting systems, including storage reservoirs which may be treated for prevention of scale formation, corrosion, algae, slime growths, etc.

Fire systems which may be subject to contamination with anti-freeze solutions, "foamite" or other chemicals or chemical compounds used in fighting fire.

Fire systems which are subject to contamination with auxiliary or used water supplies or industrial fluids.

5. Plating Facilities

Plating facilities involving the use of highly toxic cyanides, heavy metals in solution (such as copper, cadmium, chrome, nickel, etc.), acids and caustic solutions.

Plating solution filtering equipment with pumps and circulating lines.

Tanks, vats or other vessels used in painting, descaling, anodizing, cleaning, stripping, oxidizing, etching, passivating, pickling, dipping or rinsing operations.

Other lines or facilities needed in the preparation or finishing of the products.

6. Steam Generating Facilities

Steam generating facilities and lines which may be contaminated with boiler compounds such as pentachlorophenol, hydrazine, cyclohexylamine, etc. (NOTE: A very particular hazard is the possibility of steam getting back into the domestic system, causing either a system or a health hazard.

7. Plumbing Hazards

Inadequately protected (improperly installed, improperly maintained or without vacuum breakers) flush valve toilets, urinals, aspirators, retorts, pipet tube washers and similar contaminated and /or sewer connected facilities.

8. Cooling Systems-single Pass

Compressors, heat exchangers, air-conditioning equipment and other water-cooled equipment which may be sewer-connected.

9. Irrigation Systems

Irrigation systems which may be equipped with pumps, injectors, pressurized tanks or vessels, or other facilities for injecting into the irrigation system agricultural chemicals such as fungicides, pesticides, soil conditioning and other similar noxious, toxic or objectional substances.

Irrigation systems subject to contamination from submerged inlets, auxiliary water supplies, pond, reservoirs, swimming pools and other sources of stagnant, polluted or contaminated waters.

10. Plumbing -Hospitals

Contaminated or sewer-connected equipment such as bed pan washers, flush valve toilets and urinals, autoclaves, specimen tanks, sterilizers, pipet tube washers, cuspidors, aspirators, autopsy and mortuary

equipment, etc.

(NOTE: It has been found that in this type of facility little or no attention is given to the maintenance of air-gaps or vacuum breakers.)

11. Plumbing-multi-storied Buildings

Where the upper floors of multi-storied buildings are above the reach of the water purveyor's system pressure it will be necessary to use booster pumps. Considerable care must be exercised to prevent the use of the suction side line to these pumps from also being used as the take-off for domestic, sanitary, laboratory or industrial uses on the lower floors. Pollutants or contaminants from equipment supplied by take-offs from the suction side lines may be easily pumped throughout the upper floors.

12. Industrial Systems-chemical Contamination

Tanks, can and bottle washing machines and lines where caustics, acids, detergents, and other compounds are used in cleaning, sterilizing, and flushing.

13. Photo Processing Equipment

Tanks, automatic film processing machines or other facilities used in processing films, which may be contaminated with chemicals such as acetic acid, potassium ferricyanide and/or one of the many different types of the aromatic series of organic chemicals.

14. Laundries and Dye Works

Laundry machines having under-rim or bottom inlets.

Dye vats in which toxic chemicals and dyes are used.

Wash water storage tanks equipped with pumps and re-circulating systems.

Retention and mixing tanks.

Shrinking, bluing and dyeing machines with direct connections to circulating systems.

(*NOTE:* Some of these machines are equipped with pumps capable of forcing contaminated fluids through cross-connections into the public water supply.)

15. Industrial Facilities

Tanks, lines, valves, fittings, and other equipment being subjected to hydraulic tests.

Hydraulically operated equipment where the Broad Creek PSD water pressure is used directly and may be subject to back pressure.

Equipment under hydraulic tests where pumps, rams, pressure cylinders or other hydraulic principles are used to provide pressures for testing purposes.

(*NOTE:* In such cases air, gas or hydraulic fluids may be forced back into the public system.)

16. Motion Picture Studios

Open reservoirs, lagoons, tanks or similar facilities, used as props in making of motion pictures

(*NOTE:* These facilities may be heavily contaminated with body wastes, dyes, biological or chemical contaminants used in the prevention of algae and slime growths and to color the waters for color picture purposes.)

Automatic film processing machines, tanks, vats and other facilities used in processing films.

(*NOTE:* Toxic chemicals such as acetic acid, potassium ferricyanide and different types of organic chemicals may be used in these facilities.)

Special effects equipment in which chemicals and other materials may

be injected into the water supply for special effects.

17. Petroleum Processing

Steam boilers, steam lines, mud pumps and mud tanks, hydraulically operated Treolite tanks, oil well casing (for dampening gas pressures) dehydration tanks, outlet lines from storage and dehydration tanks (for purging purposes), oil and gas tanks (to create hydraulic pressures and to hydraulically raise the oil and gas levels), gas and oil lines (for testing, evacuating and slugging purposes).

18. Paper Processing

Pulp, bleaching, dyeing and other processing equipment which may contaminate with toxic chemicals.

19. Cannery Equipment

Pressure cookers, autoclave, retorts and other similar steam-connected facilities washers, cookers, tanks, lines, flumes, and other equipment used for storing, washing, cleaning, blanching, cooking, flushing, or for transmission of foods, fertilizers or wastes.

20. Auxiliary Water Systems

Most state regulations require that the service connection from an approved water supply be protected by a suitable backflow prevention device where there is an auxiliary water supply system on the premises even though there are no overt cross-connections.

21. Solar Energy Systems

Solar Energy Systems from domestic hot water heating, space heating or cooling industrial process water heating, swimming pool heating which may have cross-connections with the domestic water system. The Solar energy system may employ anti-freeze solutions or chemical corrosion inhibitors.

B. Group Ii Includes Potential Cross-connections Involving Water-using Fixtures and Equipment

Situations which should be considered in evaluating the degree of hazard to the public potable water system include:

1. Auxiliary, Fire Fighting, Irrigation, Swimming Pools, Etc. Water Supplies

Fire fighting systems- booster pumps to tank systems, storage facilities and Siamese connections.

Fish pond- pump connected

Hot water systems- drainage and flushing facilities

Irrigation systems- parks, golf courses, playgrounds, schools etc.

Jumper connections

Lawn sprinklers under pressure

Ocean water for fire protection

Fountains- display, public and private

Public and private water companies

Private wells for domestic, commercial, irrigation, and industrial use

Swimming pool inlets, recirculation systems, chlorinators, and drains.

2. Process Waters Recirculated

Air conditioning -refrigerated, air wash, make-up and drains

Ball mills

Cooling systems- refrigeration, Diesel engines, compressors

Any industries practicing water conservation

Ink mills

Paint mills

3. Water Treatment Facilities

Addition of chemicals

Boiler feed treatment

Compound feeders

Scale, corrosion, slime control

Water filtration and water softening

4. Situations Where Toxic or Objectionable Chemicals Are or May Be Transmitted, Stored or Used in a Manner Which May Endanger the Water System

Brine lines	Photo processing & washing
Foamite line	Pickling tanks
Glycerine lines	Plating works
Laboratory equipment	Refrigerants
Mixing tanks	
Oil systems	

5. Priming Lines- That Have Been Found Connected To:

Acid Pumps	Cyanide Pumps
Air Conditioner Pumps	Gasoline Lifts
Air Pumps	Glycerine Pumps
Booster Pumps	Hydraulic Elevator Pumps
Cadmium Solution Pumps	Sewer Pumps
Caustic Pumps	Sump Ejectors
Chromic Acid Pumps	Venturi Float Lines

6. Direct Water Connections to Steam Systems and Hydraulic Elevators and Air Lines, Etc.

Boilers - high and low pressure
Cold and hot water return to steam systems
Compressors
Direct-connected hydraulic elevators
Elevator air lines
Return and surge tank hydraulic elevator systems
Steam ejectors
Steam lines
Suction tees
Turbo burners
Vacuum systems

7. Industrial Lines

Laboratories
All types of industries

8. Interstreet Services - Low Pressure and Fringe Area

Elevation and pressure conditions
More than one service to a premise

9. Industrial Water-use Connections

Box Plants - glue pots, soaking vats, steaming processes

Canneries - pressure cookers, retorts, wash lines, salt wash lines

Creameries - distilled water, ice water, tap water, hot water, steam, milk,
and other products

Laundries - caustic soap solutions, hot and cold water, softened hot and
cold water, chlorinated water, and boiler room equipment

Metal works - testing lines, cooling systems, plating solutions, metal
processing lines, cutting oil, lubricant lines and welding machines

Oil companies - flushing oil lines, tanks and systems - to dehydrators,
heating and cooling systems

Packing houses - rendering vats, pressure reduction vats, and hide
soaking and pickling vats

Rubber and rubber goods plants - roll cooling machines, cookers, water
transmission systems, brine and styrene solutions

Shipyards - salt water systems, tank testing facilities, ship line testing,
pierhead outlets, fire systems, prestolite systems

Tanneries - Chemical solution and dye lines, lanolin lines and soaking
tanks

Hospitals - All types

10. Cross Connection Involving Sewage or Sewage Disposal Facilities

Fire sprinkler drain lines

Compressors - cooling systems with direct connection

Diesel engines - cooling systems with direct connection

Direct water lines to sewers for drains or flushing

Flush manholes - water supply to
 Flush tanks
 Holding tanks - camper or trailer toilet flushing facilities
 Various blowoffs or drains to sewers
 Reservoir by-passes and drains to sewer or storm drains
 Sewage chlorinators - direct injection
 Sewer flushing equipment - water connection
 Sewage sump pumps and ejectors - water operated
 Water street mains drain to sewer or storm drains
 Priming lines

Water operated pumps	Potato peelers
Baptismal founts	Shrinking tanks
Brewery vats	Sinks
Brine tanks	Soaking tanks
Cheese tanks	Spring-loaded glass
Culture vats	Washers
Dipper vats	Steam soap washing
Dye tanks	Device
Food mixing tanks	Steam table
Kitchen Equipment	Connections
Morticians aspirators	Sewage sump ejectors
Photographic tanks	Swimming pool gutter
Pickling tanks	rains
Plating tanks	Tanks
Therapeutic baths	Vats
Water jacketed tanks, vats, and pots	

11. Special Uses Where Cross Connections Are Usually Found

Baptismal tanks
 Blood plasma equipment
 Blueprint machines
 Car washing equipment - caustic and soap guns, mixers and
 Boiler equipment
 Chillers
 Commercial vacuum cleaning equipment
 Construction equipment lines

Deacrators
Garbage washing with steam and cold water connections
Humidity Controls
Hydraulic fertilizer applications
Mortuaries
Oil well leases
Pest control equipment- orchard spray
Pressure and steam cookers
Roof and house tanks
Soap mixing layouts
Solar heating systems
Steamer supply equipment
Storage reservoirs
Veterinary hospitals
Water-operated siphonage all types
Weed control equipment
X-ray equipment

12. Plumbing and Water Piping Cross-connections

Aspirators
Autoclaves
Auto shampoo
Basins
Bathtubs
Bedpan washers
Bidets
Blueprint machines
Bottle washers
Carbonators
Can washers
Coffee urns
Colonic irrigators
Laundry trays
Overflow tanks
Drinking fountains
Pressure cookers
Refrigeration units

Shampoo units
Soda fountain
Turbo burner drains
Toilets - flush valves low tanks
Overhead exposed leaking sewage
California washers (below flood level)
Integral tank and closet bowls
Lawn sprinklers (at last control valve)
Cuspidors - water operated
Dental Cuspidors - water operated
Plumbers enemy (identical gadgets)
Plumbers friend (removable hose connection between bib and lavatory
or sink drain)
Fish ponds
Frostproof toilets
Garbage grinding devices
Grease traps
Hoppers (utility)
Hose bibs - (certain types)
Hydraulic vacuum cleaners
Instrument sterilizers
Insecticide sprayers water operated
Laboratory operated vacuum pumps
Cooking kettles
Laundry washers
Dishwasher
Pasteurizers
Urinals
Washing machines
Watering troughs
Yard outlets - submerged
Yard sprinkling nozzles

C. Group Iii Lists Chemical Compounds Used in Water Treatment

Chemicals or chemical compounds which may create a hazard to the public system when injected or otherwise introduced into the customer's system include:

1. Agriculture

Solutions of chemicals are used by agriculture for many purposes. The following are some of the chemical compounds which may be injected into irrigation systems for spreading purposes. All of them are toxic in concentrated solutions.

Fertilizers - Ammonium Salts	Phosphates
Ammonia Gas	Potassium Salts
Weedicides - 2.4.D	Sodium Chlorate
Dinitrophenol	Borax
Karmex	Sodium Arsenite
2.4.5.T-	Methyl Bromide
Pentachlorophenol	
Pesticides- DDT	Parathion
TDE	Malathion
BHC	Nicotine
MH	Lindane
TEPP	

2. Cooling Systems - Open or Closed

Cooling systems - including cooling towers - usually require some treatment of the water for algae, slime or corrosion control.

Chemicals frequently used for this purpose may include the following toxic chemicals:

Quaternary ammonium compounds
Pentachlorophenol
Mercury
Chromium

Or the following chemicals which are toxic in higher concentrations:

Chlorine Permanganate

Bromine
Copper

Glucosides

3. Plating Plants

In plating work, materials are first cleaned in acid or caustic solutions at concentrations that are highly toxic, after which they are immersed in plating solutions which are highly toxic. Such solutions may contain:

Cyanides
Flourides

Or metals in solution such as:

Copper	Cadmium
Chromium	Antimony
Nickel	
Silver Salts, etc.	

4. Steam Boiler Plants

Most boiler plants will use some form of boiler feed water treatment. The chemicals normally used for this purpose include:

Highly toxic compounds such as:

Cyclohexylamine
Hydrazine
Morpholine
Benzylamine

Or the less toxic compounds such as:

Acids
Sodium hydroxide
Sodium sulphate
Sodium phosphate
Sodium nitrate
Sodium illuminant
Sodium alginate

5. Dye Plants

Most solutions used in dyeing are highly toxic. The toxicity depends on the chemicals used and their concentrations. The following types or chemical groups of dyes are generally used:

Vat Dye	Mordant Dye	Chrome Dye
Nitro Dye	Metallized Dye	Thiazol Dye

SUPPLEMENT "F"
Emergency Response Plan

Emergency Response Plan and Public Notification

All customer inquiries concerning water quality are directed to the Broad Creek PSD. When a complaint is received, it is evaluated over the phone with the customer. If the complaint is determined to be a potential problem, a member of the Broad Creek PSD is dispatched to the area reporting the problem. On arrival in the problem area, the technician will:

- a. Make a preliminary judgement of the problem by checking for odor and appearance.
- b. If a cross connection problem is suspected, notify the Broad Creek PSD office immediately. If the preliminary report indicates the necessity, follow up procedures may be activated by the Manager of the Broad Creek PSD before the samples are returned to the laboratory.
- c. Pick up samples and return them for laboratory testing. When samples of the suspected water are returned to the laboratory immediate tests will be made to determine the nature of the pollutant or contaminant. If the limitations of available test equipment prevent identification of the pollutant, the SC Department of Health and Environmental Control will be contacted and a sample dispatched by a Broad Creek PSD courier for additional testing.

If follow up procedures are activated, at this point the District Office of DHEC is contacted and notified of the situation. Beginning with the initial Inspector's preliminary report, the Broad Creek PSD shall immediately examine the cross connection control files to determine potential sources of contamination in the area of concern. The Broad Creek PSD will begin an evaluation of the problem and activate any or all of the following options he believes proper.

- (A) Direct the emergency line crews to open hydrants in the problem area and flush the lines.
- (B) If an identified potentially hazardous cross connection is in the vicinity of the problem area (as shown on the location map with the hydrants and

valves), he may contact the responsible persons (from the cross connection control files) and with Broad Creek PSD personnel make an immediate inspection. If a cross connection exists, it will be corrected or the water service disconnected. If the customer, whom is responsible for the incident, can be identified, then said customer will bear the cost of correcting the affected systems.

- (C) Direct the emergency line crews to close valves to insulate the problem area from the total distribution system.
- (D) Notify customers in the affected areas.
- (E) Should any testing or discovery during this emergency procedure reveal a health hazard contamination, additional checks to establish the problem area limits will be made, the problem area flushed and treated until proven safe. This situation would also involve using local area radio and television media and Broad Creek PSD personnel to inform the public and make personal contact with each customer in the problem area.

SUPPLEMENT "G"

**Steps for Gaining Approval of a New or Existing Service Backflow Prevention
Assembly**

Cross Connection Control Broad Creek Public Service District

Steps for Gaining Approval of a New or Existing Service Backflow Prevention Assembly

I. INSTALLATIONS

1. Broad Creek PSD provides customer with a Cross Connection Control (CCC) Backflow Information Sheet and Questionnaire.
2. Customer and/or plumber completes CCC Backflow Prevention Questionnaire, pages G6 and G7, and returns it to Broad Creek PSD.
3. Broad Creek PSD determines if Backflow Prevention Assembly is required and notifies customer in writing the type of Backflow Preventer required.
4. If Backflow Preventer is required, use List of Approved Backflow Prevention Assemblies.
5. Have an approved Backflow Preventer installed to meet all requirements. Installation must be completed prior to water service being activated.
6. Installer notifies Broad Creek PSD of the installation of a Backflow Preventer and schedules an inspection by calling (843) 785-7582. Installer shall make notification within two (2) days and shall complete pages G8 and G9 of questionnaire.
7. If the assembly does not meet requirements, corrections must be made prior to activating the water service.

II BACKFLOW PREVENTER TEST

1. Test the Backflow Preventer, using a tester only from the List of Certified Backflow Prevention Assembly Testers.
2. Have a plumber or the installer make any necessary repairs or corrections to the Backflow Preventer to meet all requirements.
3. Approved Backflow Prevention Assembly tester must return test report to Broad Creek PSD within seven (7) days of testing in order to conform to all requirements. This will place the service in compliance for a period of (1) year.

III TESTING

1. Following Installation

Backflow Prevention Assemblies must be tested by a certified tester immediately after installation and a minimum of once each subsequent year. Broad Creek PSD reserves the right to require more frequent testing depending upon the degree of hazard.

2. Certified Tester

Backflow Prevention Assemblies protecting the Broad Creek PSD distribution system shall be tested only by those certified testers whose names appear on the LIST OF CERTIFIED BACKFLOW PREVENTION ASSEMBLY TESTERS.

3. Test Results

A copy of the PASSING OR FAILING test result must be received (mailed, hand carried or faxed) by Broad Creek PSD within seven (7) days after testing. The tester shall provide a copy to the customer.

4. Backflow Preventer Follow-Up Testing

Personnel will conduct random follow-up testing of Backflow Prevention assemblies to ensure proper operation. The customer will be given advance notification of testing. Broad Creek PSD personnel may perform follow-up testing at any time and for any reason to ensure water quality and system protection.

5. Backflow Prevention Repairs

Broad Creek PSD requires all Backflow Prevention Assemblies to be tested after ANY REPAIR is made to the assembly. The test results must be received by Broad Creek PSD within seven (7) days after testing.

IV REQUIREMENTS FOR EXISTING SERVICE

1. Existing Backflow Prevention Assemblies Found to be in Non-Compliance

All presently installed approved Backflow Prevention Assemblies which do not meet the current requirements of this section, but were approved or accepted at the time of original installation and which have been properly maintained, shall be excluded from the requirements of these rules so long as it is assured that the Backflow Preventer will adequately protect its water system. Whenever an existing assembly malfunctions, or fails to pass the annual, periodic or random test, it becomes necessary to replace the entire assembly, it must be replaced and installed in a manner consistent with the current Cross-Connection Control Program Manual requirements in effect at the time. Routine check valve/relief valve or gate/ball valve/seat repairs or replacement will not require the assembly to be re-piped or brought above ground. However, whenever the existing assembly is moved from the present location, or when CCC finds that the assembly, for whatever reason, no longer ensures adequate protection for the actual or potential degree of hazard present, and the assembly is scheduled for replacement, it shall be replaced by an approved Backflow Prevention Assembly meeting current Broad Creek PSD requirements.

2. Change-out (Retro-fit)

All plumbers, contractors and installers must notify the Broad Creek PSD whenever they change out a Backflow Preventer. This notification must be made within two (2) days and shall include the make, model, size, serial number and physical location of the New Backflow Preventer. IT MUST ALSO BE TESTED AFTER THE CHANGE-OUT. Broad Creek PSD personnel will then inspect the change-out for conformance and to record/verify the Backflow Preventer's make, model, size, serial number and physical location. Broad Creek PSD will make an inspection within two (2) days.

3. Compliance on Existing Backflow Prevention Assemblies

A Backflow Prevention Assembly required by Broad Creek PSD on any existing water service must be installed within thirty (30) days from date of written notification. Failure to comply may result in the water service being disconnected. HIGH HAZARDS MAY REQUIRE A MORE TIMELY INSTALLATION.

4. Compliance on Existing Backflow Prevention Assemblies

Existing Backflow Prevention Assemblies are required to be tested annually as outlined under Test Requirements, and if replacement is necessary, BROUGHT TO CURRENT INSTALLATION STANDARDS.

V. OTHER REQUIREMENTS

1. By-pass Piping

By-pass piping is not permitted unless it is equipped with an approved Backflow Prevention Assembly of the same class as the main line assembly. In some instances it may be desirable or necessary to install two (2) approved Backflow Preventers in order not to interrupt water service.

2. Vertical Installation

CCC does not allow vertical installation of Backflow Prevention Assemblies unless they have been evaluated and approved by the University of Southern California (USC) for vertical orientation. USC has evaluated the installation of backflow prevention assemblies in the vertical position and approved several assemblies at this time. Please call for current USC vertical installation approvals.

I hereby certify that all information furnished is complete and correct. I further acknowledge that incomplete or incorrect information may result in an additional or different requirement insofar as Backflow Prevention Assemblies at the water service connection are concerned.

Signature of Applicant: _____

Date: _____ Telephone Number: _____

CUSTOMER NOTICE

In order that we may accurately determine the proper, if any, Backflow Prevention Assembly required for your service, please complete this form and return it to the Cross-Connection Control Department at your earliest possible convenience. Failure to comply will result in a delay in the installation of your water service.

CCC USE ONLY

- _____ Inch Air Gap
- _____ Inch Reduced Pressure Principle Assembly
- _____ Inch Double Check Valve Assembly
- _____ No Backflow Preventer Required

CCC Reviewer's Signature: _____ Date: _____

Additional notes: _____

**Broad Creek PSD
PO Box 5878, Hilton Head Island 29938
(843)785-7582**

BROAD CREEK PSD
Cross Connection Control Questionnaire

Date: _____ Account Number: _____

Applicant: _____
Service Address: _____

Proposed Account or Business Name: _____
Service Type (Check One): Duplex/Apartment _____
Complex _____ Commercial _____ Irrigation _____
Gov't or School _____ Industrial _____ Temporary Building/Construction _____
Other _____

YARD SPRINKLER

Yes _____ No _____ Outside Faucet Only: Yes _____ No _____
Type of Heads: Pop-up _____ Shrub _____ Soaker _____ Other _____ (Will your irrigation system be designed to add fertilizer, weed control, or other additives by using pressure, injection, or aspiration methods either manually or automatically?) Yes _____ No _____

COMMERCIAL

Type of Business: Medical, Restaurant, Catering, Video Rental/Sales, Clothing, Office, Industrial, Gas Station, Laundromat, Drycleaners, Sweet shop, Other: (Please Define Business:)

Water Used For:

Cooking/Drinking _____ Sanitary _____ Processing _____ Boilers _____ Chillers _____
Cooling Tower _____ Equipment _____ Other _____ (Are corrosion Inhibitors, Chemical Treatments or Other Additives Used in Processing, Boilers, Chillers or Cooling towers?) Yes _____ No _____
Auxiliary Water Storage: Yes _____ No _____ Swimming Pool, Hot tub or Spa: Yes _____ No _____

FIRE SERVICE

Yes _____ No _____
Type system: Dry sprinkler _____ Wet Sprinkler _____ Dry Riser _____ Wet Riser _____ Hose Cabinets _____ Supply by Hydrant or Pumper Truck Only _____ Foaming Agents: Yes _____ No _____ Anti-Freeze Agents: Yes _____ No _____ Auxiliary Water Storage: Yes _____ No _____ Fire or Jockey Pump used: Yes _____ No _____
Additional Information

BROAD CREEK PSD, SOUTH CAROLINA

**Approval Plan and Specifications for the Installation
Of Backflow Preventers**

NAME OF PREMISE _____

STREET ADDRESS _____

LOCATION OF DEVICE _____

TYPE OF DEVICE: RPZ___ DCA___ DCDA___ PVB___

MANUFACTURER _____ SERIAL NUMBER _____

SHOW LOCATION OF DEVICE IN SPACE BELOW

NOTE: DEVICE MUST BE CERTIFIED UPON INSTALLATION

COMMENTS _____

SUBMITTED BY _____

DATE _____

(WATER SYSTEMS PLEASE USE YOUR OWN LETTERHEAD)

BACKFLOW DEVICE TEST REPORT FORM

Date: _____

Account Name/Business Name: _____

Account Address: _____

Account Number: _____ Meter Number: _____

Device Name: _____ Model Number: _____

Serial Number: _____ Size: _____

Device Location: _____

Tested by (PRINT): _____

	Check No. 1	Check No. 2	Air-Inlet Valve or Relief Valve	#1 Gate or Ball (Circle One)	#2 Gate or Ball (Circle One)
Test Before Repairs	(Mark One) Leaked _____ Closed _____ Tight _____	(Mark One) Leaked _____ Closed _____ Tight _____	Opened at _____ lbs. Differential Pressure	(Mark One) Leaked _____ Closed _____ Tight _____	(Mark One) Leaked _____ Closed _____ Tight _____
	Diff Press	Diff Press			
Repairs and New Materials					
Test After Repairs	(Mark One) Leaked _____ Closed _____ Tight _____	(Mark One) Leaked _____ Closed _____ Tight _____	Opened at _____ lbs. Differential Pressure	(Mark One) Leaked _____ Closed _____ Tight _____	(Mark One) Leaked _____ Closed _____ Tight _____
	Diff Press	Diff Press			

Above data certified to be correct.

Tester Signature: _____ Certification Number: _____

Company Name: _____ Company Telephone Number: _____

Category: _____ General _____ Limited _____ Inspector Tester

Method of Testing: _____ Test Kit Used: _____

Comments: _____

BROAD CREEK PSD, SOUTH CAROLINA

TEST B MAINTENANCE REPORT Cross Connection Control Devices

NAME OF PREMISE: _____
 STREET ADDRESS: _____
 LOCATION OF DEVICE: _____

TYPE OF DEVICE: RP DC PVB SIZE: _____
 MANUFACTURER: _____
 MODEL NUMBER: _____ SERIAL NUMBER _____

LINE PRESSURE AT TIME OF TEST _____ PSI PRESSURE DROP ACROSS FIRST CHECK VALVE _____ PSI

	CHECK VALVE #1	CHECK VALVE #2	DIFFERENTIAL PRESSURE RELIEF VALVE	PRESSURE VACUUM BREAKER
INITIAL TEST	1. LEAKED <input type="checkbox"/>	1. LEAKED <input type="checkbox"/>	OPENED AT _____ LBS. REDUCED PRESSURE	AIR INLET OPENED AT _____ PSI
	2. CLOSED <input type="checkbox"/>	2. CLOSED <input type="checkbox"/>	DID NOT OPEN <input type="checkbox"/>	DID NOT OPEN <input type="checkbox"/>
REPAIRS	CLEANED <input type="checkbox"/> REPLACED: VALVES <input type="checkbox"/> C.V. ASSEMBLY <input type="checkbox"/> SEAT DISC <input type="checkbox"/> O - RINGS <input type="checkbox"/> SPRINGS <input type="checkbox"/> GASKETS <input type="checkbox"/> RETAINER <input type="checkbox"/> STEM/GUIDE <input type="checkbox"/> POPPET <input type="checkbox"/> OTHER, DESCRIBE <input type="checkbox"/>	CLEANED <input type="checkbox"/> REPLACED: VALVES <input type="checkbox"/> C.V. ASSEMBLY <input type="checkbox"/> SEAT DISC <input type="checkbox"/> O - RINGS <input type="checkbox"/> SPRINGS <input type="checkbox"/> GASKETS <input type="checkbox"/> RETAINER <input type="checkbox"/> STEM/GUIDE <input type="checkbox"/> POPPET <input type="checkbox"/> OTHER, DESCRIBE <input type="checkbox"/>	CLEANED <input type="checkbox"/> REPLACED: R.U.ASSEMBLY <input type="checkbox"/> DISC UPPER <input type="checkbox"/> DISC LOWER <input type="checkbox"/> DIAPHRAGM, LARGE <input type="checkbox"/> UPPER <input type="checkbox"/> LOWER <input type="checkbox"/> DIAPHRAGM, SMALL <input type="checkbox"/> UPPER <input type="checkbox"/> LOWER <input type="checkbox"/> SPACER <input type="checkbox"/> O-RINGS <input type="checkbox"/> WASHER <input type="checkbox"/> OTHER, DESCRIBE <input type="checkbox"/>	CHECK VALVE CLOSED TIGHT DID NOT CLOSE <input type="checkbox"/> <hr style="border: 1px solid black;"/> CLEANED <input type="checkbox"/> REPLACED: VALVES <input type="checkbox"/> DISC (TOP) <input type="checkbox"/> DISC (BOTTOM) <input type="checkbox"/> SPRINGS <input type="checkbox"/> RETAINER <input type="checkbox"/> STEM <input type="checkbox"/> GUIDE <input type="checkbox"/> POPPET <input type="checkbox"/> OTHER, DESCRIBE <input type="checkbox"/>
FINAL TEST	CLOSED TIGHT <input type="checkbox"/>	CLOSED TIGHT <input type="checkbox"/>	OPEN AT _____ LBS REDUCED PRESSURE	SATISFACTORY <input type="checkbox"/>

NOTE: ALL REPAIRS/REPLACEMENT SHALL BE COMPLETED WITHIN TEN (10) DAYS.

REMARKS: _____

I HEREBY CERTIFY THAT THIS DATA IS ACCURATE AND REFLECTS THE PROPER OPERATION AND MAINTENANCE OF THE UNIT.
 CERTIFIED TESTING COMPANY. _____

INITIAL TEST BY _____ CERTIFIED TESTER NO. _____ DATE _____

REPAIRED BY _____ DATE _____

FINAL TEST BY _____ CERTIFIED TESTER NO. _____ DATE _____

SUPPLEMENT "H"

2005 Cross Connection Program Overview

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BROAD CREEK PUBLIC SERVICE DISTRICT

2005 CROSS CONNECTION CONTROL PROGRAM OVERVIEW

The Broad Creek Public Service District (the "District") operates a cross connection control program (the "Program") in accordance with South Carolina Primary Drinking Water Regulation 61-58.7(F). This Document is an overview of the District's Cross Connection Program. For more detailed information, please consult the Broad Creek Public Service District Cross Connection Control Program Regulations dated December 2, 2005.

A. General

The District shall maintain records of (i) the location and installation date of all existing backflow prevention assemblies; (ii) type and size of each assembly and (iii) annual test results. The District shall install specified assemblies in conjunction with initiating all new service connections served by a meter less than one-inch. For meters one inch and larger, a South Carolina Department of Health and Environmental Control ("SCDHEC") approved testable device shall be required and installed at the customer's expense.

B. Low Hazard Cross Connections

All low hazard cross connections with meters less than one inch shall be protected by an approved Residential Dual Check Valve Assembly. All assemblies shall be replaced concurrent with the replacement of residential water meters. Water meters and Dual Check Valve Assemblies shall be replaced in ten (10) year intervals.

C. Single Family Residential Lawn Irrigation Systems

All low hazard single family residential lawn irrigation systems shall be protected by an approved Dual Check Valve Assembly. The minimum change out frequency for these assemblies shall be ten (10) years.

D. High Hazard Residential Lawn Irrigation Systems

Any residential lawn irrigation system that includes chemical addition or is connected to another water source which is not an approved public water system shall be protected by an approved Reduced Pressure Principle Assembly. These Reduced Pressure Principle Assembly shall be tested annually as required by SCDHEC regulation.

E. Commercial and Common Area Irrigation Systems

All commercial and common area irrigation systems shall require a testable backflow device regardless of meter size.

F. Residential Fire Sprinkler Systems

Residential fire line sprinkler systems shall be protected by an approved Double Check Valve Assembly or other SCDHEC approved back flow prevention assembly.

G. High Hazard Cross Connections

All high hazard cross connections shall be protected by a SCDHEC approved backflow prevention assembly.

The District shall notify the property owner when inspections are due and shall maintain records to verify that the test has been completed by a certified tester, necessary repairs have been completed and the assembly operates according to specifications.

H. Annual Inspections and Repair

The District shall notify a property owner when inspections are due and shall maintain records to verify that the test has been performed by a certified tester, necessary repairs have been completed and the assembly operates according to specifications.

The District shall maintain a list of independent certified testers. The list shall be posted on the District's web page and copies shall be provided to customers upon request.

If a property owner fails to have the annual inspection performed or the necessary repairs completed, then, after adequate proper notification, the District shall assure that such inspections and/or repairs are completed. The District shall be authorized to inspect such backflow prevention devices and charge property owner a \$35.00 inspection fee. The District shall also be authorized to engage a certified tester to perform any necessary work, and the property owner shall then be billed for actual costs incurred.

I. Transition Plan

This Program has been fully implemented. No existing customer is required to take any action to comply with the Program.

Customers who currently have both Dual Check and Double Check Valve Assemblies or other SCDHEC approved backflow prevention assemblies may elect to remove or leave in place the customer-owned assemblies. Removing the working parts of an assembly shall be considered to be a removal. This action shall be performed at the customer's expense.

Existing SCDHEC approved backflow protection devices left in place which are protected by District-owned and maintained Dual Check Assemblies shall not be subject to the annual inspections and repairs as specified in paragraph H.

J. Enhanced Protection Plan

Customers may at any time install SCDHEC approved backflow protection assemblies that exceed the requirements of this policy.

Customers may request the District to remove the district-owned Dual Check Valve Assemblies and install SCDHEC approved testable backflow prevention assemblies. The customer's assemblies shall then be subject to the annual inspections and repairs as specified in paragraph H. This action shall be performed at the customer's expense.

K. Public Education

All customers shall be notified of the District's Cross Connection Control program annually. Customers shall be informed that they may remove or continue to maintain backflow control assemblies not required by the Program, and they shall be informed of the risks and benefits of removing the assemblies.

L . Policy Approval

This Program shall be in full force and effect January 1, 2006. These regulations supersede and replace in entirety the Cross Connection Control Program June 2001. Passed and adopted by the Commission of the Broad Creek Public Service District of Beaufort County, South Carolina on December 2, 2005.